MacMurchy

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INFANT MORTALITY

SPECIAL REPORT

BY

Dr. HELEN MacMURCHY

TORONTO

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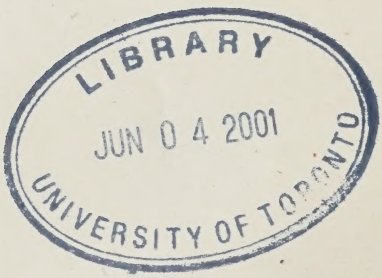


TORONTO, April 25th, 1910.

HON. W. J. HANNA,
Registrar-General of Ontario.

SIR,—Acting upon instructions, I have the honour to submit the accompanying report of Dr. H. MacMurchy on Infantile Mortality.

I have the honour to be, Sir,
Your obedient servant,
THE DEPUTY REGISTRAR-GENERAL.

Dr. Charles A. Hodgetts,
Deputy Registrar-General for Ontario.

Sir,—I have the honour to submit the accompanying Report on Infant Mortality, prepared under the instructions and by the permission of the Hon. W. J. Hanna, Provincial Secretary for Ontario.

I have the honour to be, Sir,
Your obedient servant,
Helen MacMurchy.

Report on Infant Mortality.

The field of modern medical research and labour is infinite in its possibilities, and the greatest of these are found in the domain of Preventive Medicine. Infant Mortality is the greatest problem of Preventive Medicine.

Infant Mortality in Ontario.

In the Province of Ontario, according to the last (thirty-eighth) Report of the Registrar-General, for the year 1907, the total number of deaths was 33,502, and the number of deaths under five years was 9,930. In other words, Infant Mortality is 29 per cent. of our total death-rate.

Compare with this the total number of deaths due to Tuberculosis in 1907, which is 2,530, or 8 per cent. of the total death rate. Not nearly enough is said or done about Tuberculosis, but what is said or done about Infant Mortality?

In the City of Toronto, in 1907, there were 1,313 deaths under one year of age, and the total number of births was 6,680. This gives an Infant Mortality rate of 196 per 1,000, approximately one-fifth, or 20 per cent. Is this true? Is the registration attended to?

An Educational Campaign.

This is a record of which we have no reason to be proud, and which proves the need of an Educational Campaign which the Provincial Authorities, the Board of Health, the medical profession and the public, cannot too soon open.

Thirteen Hundred and Thirteen White Coffins.

One out of every five of the children born in the City of Toronto is carried out of the home in the little white coffin before the year is out. Whose business is it to find out why? And this in a country where there is much room and much need for new citizens. The best of our new citizens are our children. The potential value to the country of these lives, which might easily be saved by proper maternal and medical care, is beyond price or computation. *Every year nearly Ten Thousand Children in Ontario,* under the age of five years, go to their graves. We would think ten thousand emigrants a great addition to our population. It is a question if ten thousand emigrants from anywhere would equal in value to us these ten thousand little Canadians of Ontario, whose lives are sacrificed to our carelessness, ignorance, stupidity and eager haste to snatch at less valuable things.

The Century of the Child.

The dawn of this century beheld "a great change in the opinions and modes of thinking of Society," and this, as John Stuart Mill once said, "always means an impending revolution in matters social and political." We are beginning to contrast "The petty done, the undone vast." And one of the signs of that revolution is our altered estimate of human values, and especially of the value of childhood. Obvious as the discovery is, we are only now discovering that Empires and States are built up of babies. Cities are dependent for their continuance on babies. Armies can be recruited only if and when we have cared for our babies. The Sanitarian has said that the infant mortality rate is the test of real sanitary sense and progress, and we do not seem to believe it. But we must come back to it.

The Twentieth Century is the Century of the Child. As the attending angels told the watching shepherds, "This shall be a sign to you," and that sign was a Child. In the matter of the nation's greatest asset—her children—we are beginning to see that the greatest nation, the nation that can count on continuance, is the nation who can say—"Ecce! Ego et liberi mei quos dedit mihi Dominus."

The Massacre of the Innocents.

But instead of making this glorious boast, what a Massacre of the Innocents we make.

"Herod sent forth and slew all the children that were in Bethlehem and in all the coast thereof, from two years old and under, according to the time which he had diligently enquired of the wise men."

"Then was fulfilled that which was spoken of by Jeremy the Prophet, saying —In Rama was there a voice heard, lamentation and weeping and great mourning, Rachel weeping for her children and would not be comforted because they were not." That was one of the world's tragedies, and one of the world's crimes.

Herod Out-Heroded by Modern Civilization.

But the crime of Herod is out-Heroded by the crimes of modern civilization. In Bethlehem then, as the commentators tell us, there were perhaps 1,000 inhabitants, and the slain children might number 20 or 30. The tragedy of Bethlehem pales before the tragedy of the Babylon of Modern Civilization.

The Modern City with its democratic government, its relief agencies, and its charitable organizations, is only too familiar with the tale of Infant Mortality. "Where the white hearse goes most often, there you will find the weakest places in your municipal housekeeping"—(Sherman C. Kingsley, Superintendent of the United Charities of Chicago).

Give the Baby a Chance.

There is something wrong with the place where children die. It has been pointed out that in a modern city the new-born child has, on an average, less chance of living a week than a man of four score years and ten, and less chance of living a month than a man of four score. Give the baby a chance. Whoever is in fault when the baby dies, it is usually not the baby. Nature sees to it that even when the parents physically are not what they should be, the baby is, in 80 or 90 per cent. of cases, born healthy. Nature does her part, but we leave ours undone.

"The number of deaths of babies under one year of age is greater than the number of deaths from any other single cause or disease the world over.

"The National Government of the United States spends $7,000,000.00 on plant and animal health every year, and hundreds of thousands fighting beetles and potato bugs, but not one cent to aid the six million babies that will die under two years of age during the next census period while mothers sit by and watch in utter helplessness. This number could probably be decreased by as much as one-half. Why is nothing done? Charities have been organized in all countries to protect and relieve the poorer mothers; societies have been formed to provide pure milk to the mother and her babe; fresh-air funds have proved a magnificent help; societies to enable mothers to have a breath of the sweet country air answer many a need. With what splendid results have little ones in the care of ignorant, helpless mothers had these blessings. Many lives have been saved, but still statistics continue to show the appalling mortality. Why? Principally because the present efforts are

in the nature of relief work and not systematic educational work—they lack practical medical supervision of infant health; they do not strike at the root of the evil conditions, the ignorance which mothers are so willing to admit, and the need for practical medical supervision, which is the crying necessity. Nothing so far proposed has materially reduced the death rate. Passive interest will accomplish nothing. Spasmodic conventions to discuss this momentous question will accomplish nothing. The question is, what is to be done, and how to do it?

"The saving of babies—the preservation of infant health, can be accomplished in only one way, and that is to awaken the active interest of everybody in the problem on behalf of the little ones, and then to join the hands of the mother, the family physician, the infant specialist, and the trained nurse in one grand effort to reduce infant mortality. The purpose is so high, so imperative, so humane, that it appeals to the common sense of everyone." (Mrs. Arnoldi, quoted by the American Committee of One Hundred on National Health.

WHAT WE KNOW ABOUT INFANT MORTALITY.

The Most Important Thing.

One thing we know about Infant Mortality. If the baby is nursed by its mother the chances are great that it will live. If the baby is fed in any other way the chances are great that it will die. This is putting it moderately, as the following facts will show. Of 300 infants admitted to the Dresden Children's Polyclinic in 1900 to 1901, there were 53 deaths. All the deaths, 53 in number, were among the bottle-fed babies. Among 93 breast-fed babies, during the same period, in the same hospital, there was not a death. Of children dying under one year, more than two-thirds die from gastro-intestinal diseases, in other words, from food-poisoning. When trade is depressed and work scarce, when wages are low, and employment intermittent, the rate of infant mortality drops. What explanation is there for that, except that the mother is at home and the baby is nursed, because good wages and easily got work do not tempt the mother to work outside her home?

In the Siege of Paris, 1870-1871, when the general mortality rate is said to have doubled, the infant mortality actually fell 40 per cent.

The same tragic and dramatic proof occurred during the cotton famine, and it occurs every time there is a big strike affecting women's work.

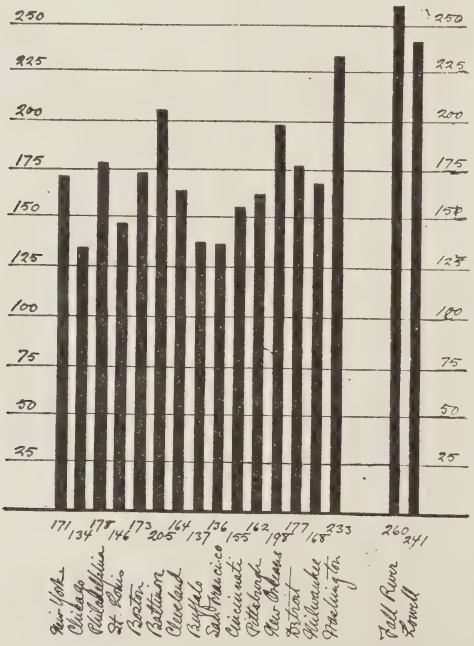
In July, 1909, the number of deaths of children under one year from gastro-intestinal diseases in the Borough of Manhattan, New York, amounted to 423, or 62.4 per cent. of the deaths of children under one year from all causes. During the month of August the number of deaths of children under one year from gastro-enteritis was 731, and from all causes 1,081, 67.6 per cent being due to intestinal disturbances. In the City of Berlin, Germany, in July, 1909, there were 913 deaths of children fed on cow's milk, and 86 deaths of children breast-fed. In August, 1,445 deaths occurred among the artifically-fed babies, and 76 among those maternally nursed. The Medical Officer of Health for Birmingham enquired into the deaths of 3,000 babies in Birmingham, and found of these 3,000 dead babies only 24 had been nursed at the mother's breast only. Mother's milk is the only really safe food for baby. The baby that has one chance for its life if fed on condensed milk would have two chances for its life if fed on good cow's milk, and one hundred chances for its life if fed on its mother's milk and nursed at her breast.

Infant Mortality in Ontario.

The following table gives the infant mortality in Ontario during the last ten years:—

—	Total births.	Total deaths all ages	Total deaths under 1 year including still-births.	Total deaths under 5 years.	Per cent. of deaths under 1 year to total deaths	Per cent. of deaths under 5 years to total deaths	Deaths under 1 year to 1000 births.
1898	46599	26370	5975	7967	22.658	30.212	128.22
1899	44705	28607	6342	8252	25.665	28.846	141.86
1900	46127	29494	7163	9152	24.289	31.030	155.28
1901	46061	29608	6543	8397	22.102	28.360	142.05
1902	47796	27864	6003	7987	21.543	28 656	125.59
1903	48742	29664	6700	8634	22.585	29.106	137.66
1904	50265	31290	6902	8513	22.058	27.206	137.31
1905	51911	31369	7694	9534	24.527	30.424	148.21
1906	51710	32782	8405	10088	25.632	30.772	162.54
1907	53584	33502	8041	9930	24.001	29.640	150.06

Infant Mortality in Great Cities and Manufacturing Towns Where Women Work.

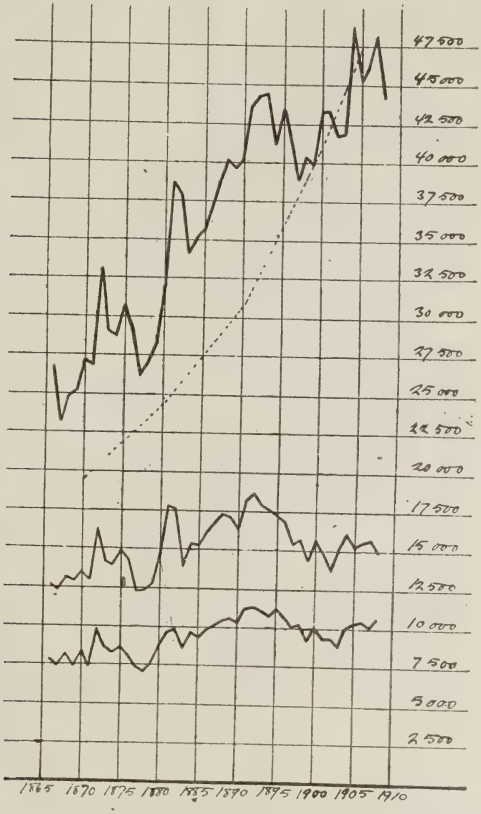


*1. Deaths under one year of age per 1,000 births, as reported to census enumerators in 1900, in the fifteen largest cities of the United States and in two manufacturing cities in Massachusetts.

Diagram 1 shows that great cities have a great Infant Mortality, and also shows that manufacturing towns where women work have a still greater Infant Mortality.

* Diagrams 1-10 are here republished by kind permission of Dr. Edward T. Devine, Editor of the *Survey*, and the American National Association for the Prevention of Infant Mortality.

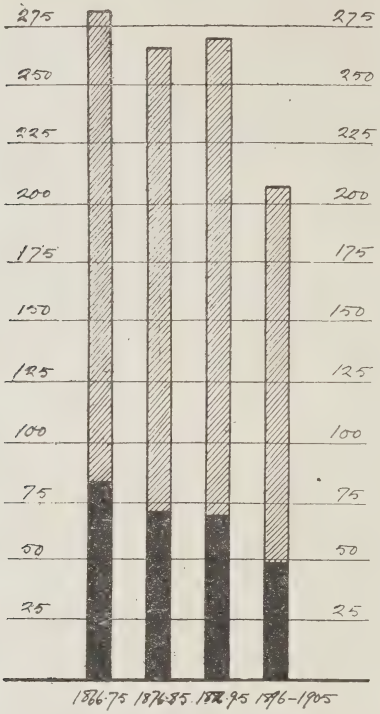
INCREASE OF POPULATION AND INFANT MORTALITY.



2. Deaths in Manhattan and Bronx Boroughs of New York City, 1866-1906:
Upper line: deaths at all ages.
Middle line: deaths under 5 years of age.
Lower line: deaths under one year.
Dotted line: population at census years, on a scale 50 times smaller.

Diagram 2 shows that Infant Mortality has not increased so fast as the population.

IMPROVEMENT IN NEW YORK INFANT MORTALITY.



3. Average annual death-rates (per 10,000 population) in Manhattan and Bronx Boroughs for four decades. Entire column represents death-rates at all ages; the black part at the bottom, death-rates under one year of age.

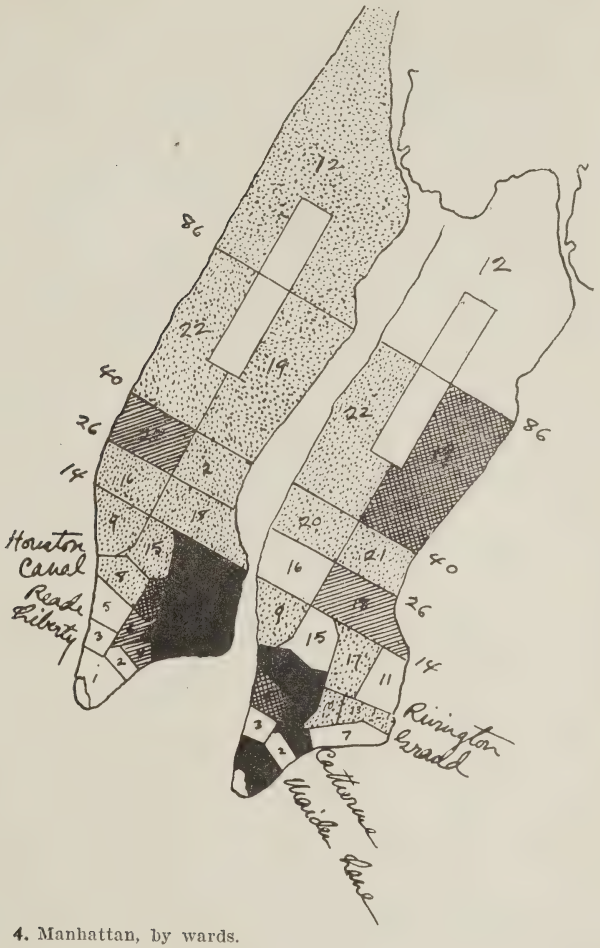
Diagram 3 shows that in New York Infant Mortality has decreased. Hard work on the part of the authorities brings it down. The New York Health Department works for the babies, and works hard.

General death-rate decrease, 1896-1905, 26 per cent.

Infant death-rate decrease, 1896-1905, 43 per cent.

There is another consideration as Dr Devine points out. The decrease in infant mortality occurred at a period when there was an enormous increase in the Jewish population. Had this anything to do with the improvement? Where do the Jews live? The next diagram answers the question.

The Jews and Infant Mortality on the East Side of New York.



4. Manhattan, by wards.

A. Density of population in 1900.
Under 100 per acre: Wards 1, 2, 3, 5.
100-199: Wards 8, 9, 12, 15, 16, 18, 19, 21, 22.
200-299: Wards 4, 6, 20.
300-399: Ward 14.
400 and over: Wards 7, 10, 11, 13, 17.

B. Child mortality in the decade 1896-1905: average annual number of deaths under 5 years of age per 100,000 population of all ages.
Less than 700: Wards 2, 3, 7, 11, 12, 15, 16.
700-799: Wards 9, 10, 13, 17, 20, 21, 22.
800-899: Ward 18.
900-999: Wards 5, 19.
1,000 and over: Wards 1 4, 6, 8, 14.

Diagram 4 shows that the lower part of Manhattan below 14th Street has a lower infant mortality than the upper part of Manhattan above 14th Street—and the Lower East Side of New York has a lower infant mortality than the Lower West Side.

But the sons of Jacob and all the tribes of Israel live on the lower East side.

Rachael is a Good Mother.

Though Rachael herself never lost a child, it is remarkable that her name comes to the mind of the Sacred writer as the representative of the loving and beloved Hebrew mother. Rachael gave her own life for her child, dying when Benjamin was born. "And it came to pass, when her soul was in departing, for she died, that she called his name Benoni (Son of my Sorrow)."

The miraculous survival of the Hebrew race, ages after the very names of their oppressors have perished from the earth, is manifestly largely due to their proverbial attention to, and success in, their parental duties, and this diagram proves it.

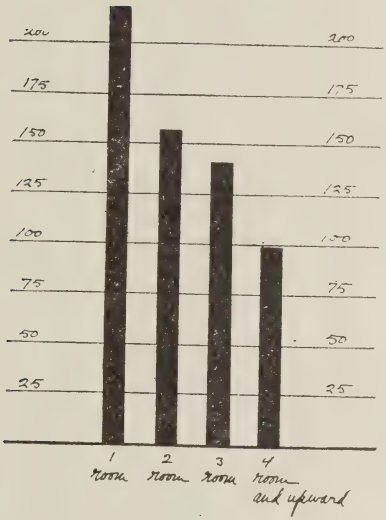
Congestion of population, fatal to the infants of other races, has been overcome in the Lower East Side of New York by the devotion of the Hebrew mothers to their children. It is well known that Hebrew mothers almost invariably nurse their children.

E. W. Hope, the Medical Health Officer of the City of Liverpool, and one of the greatest health authorities in the world, says: "I desire to add a few words in reference to the Jewish community, and for the purposes of my illustration I take fifty poor—some very poor—Jewish families, taken consecutively. The family earnings averaged from 10s. to 30s. per week. The points which stand out are, first, that in every instance the children are well looked after, all suitably clad, and not one ragged or barefooted child seen. Domestic dirtiness is uncommon, but even where it existed all the mothers seemed to realize their duty and act upon it. The beds were clean, and always a cot provided for the baby beside the mother's bed. Thriftiness and sobriety were universal; no drunkenness at all. A noticeable feature which always impresses the visitor is the attention given by the mothers to the children's food. In no single instance was the midday meal wanting; moreover, it is usually good and wholesome and prepared in a way which the children relish. It must be remembered that some of these families were in receipt of relief from the Jewish Board of Guardians."

Nor are the Hebrew women left alone to bear more than their share of family cares. Jewish men are at home a good deal. It is pretty safe guessing to say that doctors see more of Hebrew husbands and fathers than they do of any other nationality. They watch their families. As a rule, when the mother has to go to the hospital with some thought of an operation her husband goes with her. In a recent operation at Toronto General Hospital for ectopic gestation —a condition the danger of which is not always easy to explain to the husband so as to secure his consent to instant operation—the chief surgeon expressed a wish to send for the husband. There was no need to send, he was downstairs at the moment, and when he was told of the favourable result of the operation, he fervently said: "I am very thankful to God and to Dr. R."

Far away from Galilee, from Judea and from Jerusalem, so far on the other side of Jordan that they may scarcely know the names of the places which were the cradle of their race, in the depths of grinding poverty, not only submerged but struggling for existence at the bottom of such a pit as is digged for their feet by the lowest conditions of life in a great city, still are the Jewish parents true to the traditions of their race, and still does the Jewish mother save her children, too often, alas, as her physicians know, by the sacrifice of herself.

OVERCROWDING.

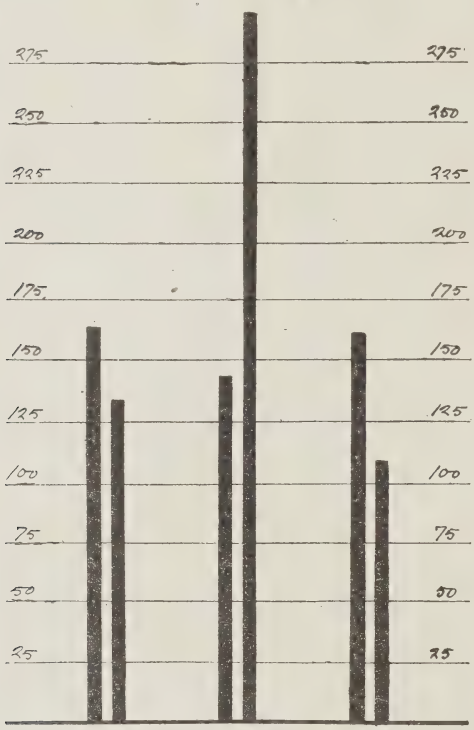


5. Infant mortality per 1,000 births in the Metropolitan Borough of Finsbury, 1905, classified according to the number of rooms occupied by the family.

But as Diagram 5 shows, when a family lives in one room, the result is very fatal to the baby.

In Berlin, 1903, Newman investigated 2,701 infant deaths. Where the families were in one-room dwellings he found 1,792 deaths; in two-room dwellings, 754 deaths; in three-room dwellings, 122 deaths, and in larger dwellings, 43 deaths.

MALE AND FEMALE—BLACK AND WHITE—CITY AND COUNTRY.

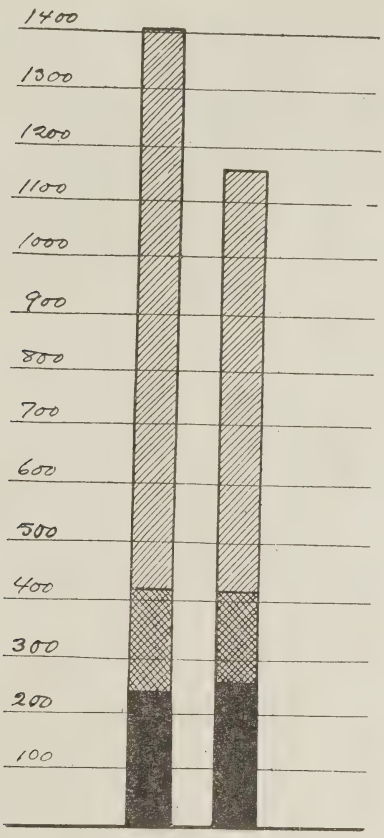


6. Deaths under one per 1,000 births in the registration record of the United States, 1900.

Diagram 6 shows that male infants have a higher infant death-rate than female infants.

Also that the poverty and ignorance of the black race doubles infant mortality, and finally that the country is a better place for babies than the city.

City and Country.



	London	Rural Counties.
Under 1 year ...	1,403.0	1,158.8
Under 1 month ..	417.5	414.6
Under 1 week ..	240.5	258.8

7. Infant mortality rates per 10,000 births in 1902, in London and certain rural counties.

Diagram 7 shows that, except in the first week of life, the country is a safer place for babies than the city. The figures for the first week are probably explained by the fact that medical assistance is easier to get in the city.

When we consider the remarkable tendency to urbanization in modern life, this matter will be seen to be of great moment to the infant mortality rate.

Sixty years ago in England, 75 per cent. of the population was rural, and 25 per cent. urban. But now the conditions are reversed; 25 per cent. is rural and 75 per cent. urban. City conditions must be thoroughly studied by those interested in Infant Mortality. The same conclusion is forced upon us by a study of the following tables, by Dr. Newman.

When we remember that our industries in Ontario are mainly agricultural, we should not have such a large infant mortality as 150 per 1000.

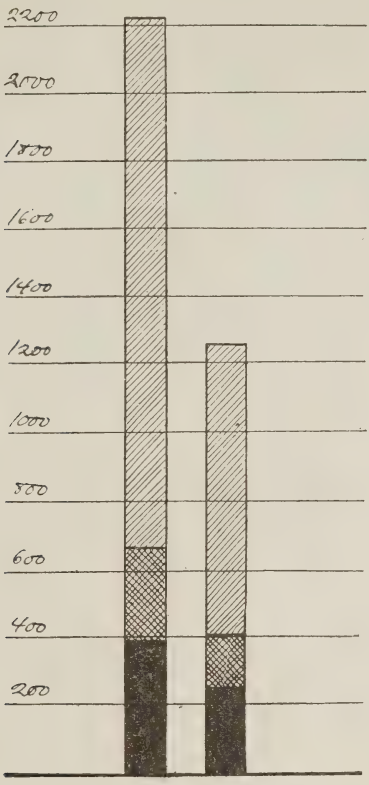
TABLE 1—Infant Mortality Rates in Wiltshire and England and Wales, 1900-1904.

Districts.	1900	1901	1902	1903	1904
County of Wiltshire	94.0	93.7	97.23	85.63	95.99
Urban Districts (Wilts)	95.6	106.8	93.63	89.27	100.32
Rural Districts (Wilts)	115.7	83.8	99.89	82.76	92.52
England and Wales	154.0	151.0	133.0	132.0	145.0
Large towns in England	172.0	168.0	145.0	144.0	160.0
Rural England and Wales	138.0	137.0	135.0	118.0	125.0

TABLE 2.

Age.	Of 100,000 infants born, the number surviving at each age.			Annual death rates per 1,000 living in each successive interval of age.		
	Three rural counties: Herts., Wilts., Dorset.	Five mining and manufacturing counties: Staffs., Leic., Lancs., W. R. Yorks, Durham.	Three selected towns: Preston, Blackburn, Leicester.	The three rural counties.	The five mining counties.	The threee towns.
At birth	100,000	100,000	100,000	213	331	382
3 months	94,820	92,051	90,874	75	154	240
6 months	93,068	88,574	85,574	61	128	180
12 months	90,283	83,081	78,197	.....	.....	.....

LEGITIMATE AND ILLEGITIMATE.



	Illegitimate.	Legitimate.
Under 1 year ...	2,234.9	1,250.2
Under 1 month .	666.1	404.5
Under 1 week ...	387.6	242.6

8. Infant mortality rates per 10,000 births among illegitimate and legitimate children in London and certain rural counties in 1902.

Diagram 8 shows that the Infant Mortality among illegitimate children is greater than among legitimate children. The illegitimate child is not so well taken care of, and Infant Mortality is a question of education, care and comfort. One English writer states that in the aristocratic classes of England 10 per cent. of the babies die in the first year. In the middle classes of England, 21 per cent. of the babies die in the first year. In the working classes of England, 32 per cent. of the babies die in the first year.

THE MOTHER VS. THE INSTITUTION.

It is a poverty question largely.

Everything we can do to increase efficiency and prevent poverty, will prevent infant mortality too. And it is through the mother that infant mortality can be prevented. Institutions for infants, Creches, Day Nurseries, Infants' Homes, are not at all the best solution of the problem of Infant Mortality among the poor,

deserted and unfortunate. They have been established by the best and kindest people, and with the best intentions; but when they take the baby away from the mother, they sign the baby's death warrant.

Instances were given by Mr. Homer Folks, of the recent Conference on Infant Mortality at Yale University, New Haven, of Infant Asylums where the death-rate was 85 per cent. We pridefully plan to set up an Orphan Asylum or a Foundling Hospital or an Infants' Home. *We cannot do what the mother can.* Nature spurns our false ideas of putting babies in institutions. Her one institution is the home, and a home must be made for the baby. As Kipling says of the Cave Dwellers, "They went to another cosier cave when the baby came." The institution has been tried and found wanting.

"I do not hesitate to say that the results of a rather careful study recently carried on (to which, I am glad to say, the Institutions have carefully lent every assistance) shows that in the very best of such Institutions and under the most favourable circumstances, not more than 50 per cent. of the children admitted for permanent care survive, while in other cases the percentage still runs much higher.

"The reason for this has become clear. It is not that the infants are neglected or uncared for; it is not that the Institutions are not humanely administered; it is the fact that the infant is deprived of its natural food. Artificial feeding is what kills babies in infant homes. The New York City Health Department, in its campaign to prevent infant mortality, says, 'Ten bottle-fed babies die to one that is breast-fed.' The conclusion is unescapable that the deliberate separation of a nursing infant from its mother in the vain hope of saving some one's good name, or, rather, to save his feelings, is to deliberately incur a most serious responsibility, and is to become an accessory to a process which in 50 per cent. or more cases results in the child's death."—*Homer Folks.*

Married Women's Labour.

Even such excellent institutions as Creches and Day Nurseries, do, to some extent at least, encourage the mother to work. On the other hand this should be the very last resort.

"The best and most paying job that the community can set any mother at is that of raising her own child to the highest pitch of efficiency and intelligence. Some day we will have sense enough to pay her to do it and feed herself well in the process; though the ultimate, most desirable and permanent solution would be to give higher wages to the father."—*Woods Hutchinson, M.D.*

Dr. Woods Hutchinson might have added to the above, to make the father worth higher wages. That is another great difficulty. But any man who does useful and necessary work, such as driving a street car, digging drains, or delivering letters, should be paid enough to allow him to marry and support a family. The mother's labour outside the home, as John Burns says, is "an individual mistake, a social tragedy, a commercial blunder." It makes the idle husband, "buttressing a beer-shop, or French-polishing the outside of a public house." And he goes on to say, speaking as an authority on the wage question, "The combined wages of husband and wife do work out rarely equal to the remuneration of the man who is determined to have a standard of comfort that will keep his wife at home and himself at work."

Dr. George Reid, in 1906, speaking in London, at the National Conference on Infant Mortality, divides the working class into three divisions, according to the question of the mother's work: 1. Those among whom the proportion of employed, married and widowed females between eighteen and fifty years of age reached or exceeded 12 per cent. 2. Those among whom the proportion was 6 to 12 per cent. 3. Those among whom the proportion was below 6 per cent. The decades 1881 to 1890, 1891 to 1900, and four years, 1901 to 1904, were studied. The infant mortality was always highest in group 1 and lowest in group 3. The average yearly infant mortality rates of group 1 were, per thousand, 195, 212 and 193; group 2, 165, 175, 156; group 3, 156, 168, 149.

The Mother Works, and the Baby Dies.

Where the mother works, the baby dies. Nothing can replace maternal care. The destruction of the poor is their poverty.

Helle examined into the social status of parents of 170 infants dying in Gratz during 1903 and 1904; 112 infants who died had very poor parents; 49 children had poor parents; 9 had well-to-do parents, and no deaths occurred among the children of the rich; the percentage of the four classes being 65.9, 28.8, 5.3, none.

A supreme objection to the mother being compelled to work, is that she cannot nurse the baby if she works. (See also Diagram 10.) We all know and we should impress it upon any one with whom we have any influence, or for whom we have any responsibility, that the way above all others to save the baby and reduce Infant Mortality, is to see that the child is being nursed by the mother, and any occupation that prevents this or makes it hard, is a direct cause of Infant Mortality.

The Illegitimate Child.

Then comes the question of the illegitimate child. Who is to blame? The community certainly. What have we done to rebuke and uproot vice, to protect virtue, to foster manliness and womanliness? The church cannot escape blame, nor the medical profession, nor the merchant or manufacturer, unless we can show that we have done something at least to remove temptation and to lessen wrong conditions. The grandparents presumably are to blame. They are usually the very ones who have the child kept away from the mother and out of sight. The father and mother beyond question are to blame. The only one who is really innocent of blame is the poor baby, and yet on that little child the heaviest penalty falls. It would surely be better for the community to provide, as far as possible, that the mother should nurse her own child and care for it at least a year. There are some societies and institutions which insist on this, but until we are willing to care more for the baby's life than for our own dislike to hear such things mentioned, so long the illegitimate child will die, and its blood will be required at our hands.

Causes of Infant Mortality.

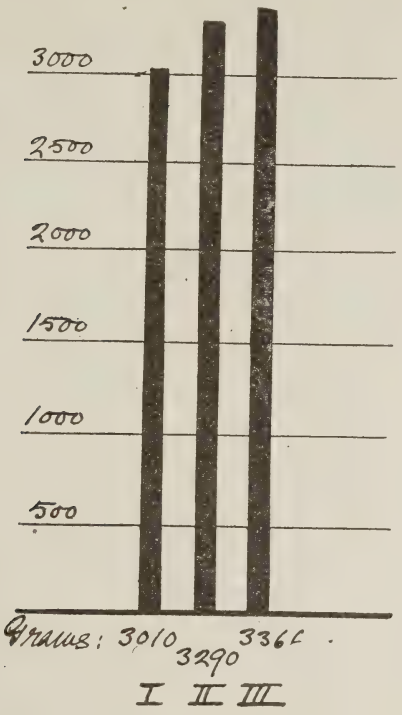
9. Causes of infant mortality. From a classification of the causes of 44,226 deaths under one year of age in New York, Philadelphia, Boston and Chicago, in a lecture by Dr. L. Emmett Holt in the course on Sanitary Science and Public Health in Columbia University, 1909.

Diagram 9 shows that the Causes of Infant Mortality are very largely preventable, perhaps 75 per cent. may be set down at once as preventable.

Infant Mortality Prevented.

At least 50 per cent., and probably 60 per cent., or even 80 per cent., of Infant Mortality, is preventable. The proof of this statement is that it has been done. It was done in 1907 by a Parish Priest in the Province of Quebec, who cut the Infant Mortality of his parish in two. It was done by Mr. Benjamin Broadbent, the Mayor of Huddersfield, whose personal efforts, including the famous Mother's Promissory Note, reduced the Infant Mortality of Huddersfield 50 per cent.—and it was done in Hertfordshire, where the Infant Mortality in 1908 was 79 per thousand, about half what it is in Ontario.

CARE FOR THE MOTHER-TO-BE.



10. Average weight at birth:
I. Of 500 children whose mothers worked up to the day of confinement.
II. Of 500 children whose mothers spent ten days before confinement in a pre-maternity home.
III. Of 500 children whose mothers spent more than ten days in a pre-maternity home.

Diagram 10 shows a good way to prevent Infant Mortality. Take care of the mother, and save the child that is soon to come.

Another illustration is given by John Burns. North Staffordshire is a district where many married women work. South Staffordshire is not.

	North Staffordshire.	South Staffordshire.
Abnormalities at birth per 1,000	15	6
Still-births per 1,000	9	3

INFANT MORTALITY IN RELATION TO THE SIZE OF THE FAMILY.

It is well known that where there is a high birth-rate, there is also a high Infant Mortality, and in a study of 160 families of the poor, wage-earning class (parents foreign-born in 97 per cent.), Dr. Alice Hamilton, of Hull House, Chicago, shows that the Infant Mortality of the families having six children, was 2 1-2 times that of the families having four children or fewer.

The Products of Injured Infancy.

Infant mortality has another aspect. Where one dies, many are maimed for life. The unemployable, the useless, the hopeless, the feeble in body and mind, are simply "the matured products of injured infancy." Much loss of life means much loss of health and vigour. And when we have found and put into practice proper measures to prevent loss of life in infancy, we shall have prevented the permanent loss of health and strength in many of the survivors.

The Report of the Registrar-General of England, for 1903, shows for England and Wales, 51.4 per cent. of infant deaths in the first three months; 19.9 per cent. in the second three months, and 28.7 per cent. in the last six months in the first year of life. In the year 1904, in Berlin, 53.6 per cent. of deaths of infants under one year occurred in the first three months. They die in the first three months because of insufficient vitality or of insufficient care. But of the survivors, how many are really fit to live?

Infant Mortality in Other Countries.

We must go to Egypt and the East for the highest Infant Mortality. In Egypt it is 283 per thousand.

In Alexandria, in 1907, 319 per thousand; while in Chili, it is 326, and Russia, 268.

Grabam states that, in 1903, the infant mortality of France was 137. In the previous twenty years it was 167, and yet this death-rate ought to be still more greatly reduced, for we know that Ireland has an infant death-rate below 100. Norway, in 1902, had an infant death-rate of 75, and Sweden, 107 per 1,000. Belgium has now a rate 155 per thousand, Italy 172, and Germany 204.

Infant Mortality Slowly Decreasing Elsewhere.

Four years ago it was truly said that in spite of all our progress, infant mortality remained stationary. It is not so now in England, France, Germany and the United States. In many places infant mortality has been reduced one half.

In France, 1874 to 1893, the average infant mortality was 167 per thousand. Ten years later, in 1903, it was only 137 per thousand. In Paris it was only 101; Paris has the smallest birth-rate and the lowest death-rate of any large European city.

In the United States.

Grabam says: "That a general propaganda against infant mortality has been vigourously pushed all over the United States is shown by the census, 1880 and 1890. In 1880 the general infant mortality of the United States was 246 per thousand; in 1890 it had fallen to 159 per thousand, and during the same period it is gratifying to note that the infant mortality in cities decreased from 303 to 184 per thousand. This is surely a record to be proud of."

Infant Mortality in Charlottenburg.

The mortality of children for the first year of life reckoned for 100 living, amounts to 12.5. The following figures show the gradual reduction of mortality in Charlottenburg. For 1880: 33.67; 1885: 28.75; 1890: 25; 1895: 22.60; 1906: 14.16 for 100 born living. And still this is ten times as great as the general death-rate.

Infant Mortality in Hertfordshire.

In 1908 the infant mortality for Hertfordshire reached 79.0, the lowest figure it has yet touched. With slight setbacks in 1904 and 1906, it shows a steady decline. But the low figures of the last two years have been partly due to the weather. Only in 1903 has the number of deaths from diarrhoea been previously so low; and, last year, although there were eleven more infant deaths from this cause than in 1907, there were still 81 fewer than in 1906. In this connection, Mr. Francis Fremantle, C.M.O., writes: "A hot, dry summer will again raise the rate. Moreover, we have no reason for satisfaction in the loss of 80 infants out of 1,000 born. In England and Wales, the rate until recently was a little lower than in 1850, the highest rate being that of 163 in 1899; and only 40 infant deaths out of every 1,000 births can be considered strictly non-preventable."

Infantile Mortality in Huddersfield.

There is the bright example of Huddersfield, which, in 1891, had an infant mortality of 184 per 1,000, and in 1907, 97 per 1,000. Bristol's infant mortality in 1891 was 184 per 1,000, and in 1907, 98 per 1,000. The parish of Battersea, in the same period, doubled its population and reduced its Infant Mortality from 176 to 115 per 1,000, and in some districts of Battersea, the infant mortality was as low as 52 per 1,000. In 1891, in Westminster, out of every 1,000 infants born, 164 died before reaching the first anniversary of their birth, but in 1900 the number was reduced to 148, and in 1908 it was 103.

Infant Mortality in England and Wales.

The following tables show the Infantile Mortality since 1850 for England and Wales. It will be seen that more progress has been made in the last five years than in fifty years previously:

Years.	Death rate per 1,000 population.	Deaths under one year per 1,000 births.
1851–1855	22.6	156
1856–1860	21.6	151
1861–1865	22.5	151
1866–1870	22.4	156
1871–1875	21.9	153
1876–1880	20.8	144
1881–1885	19.4	138
1886–1890	18.8	145
1891–1895	18.7	150
1896–1900	17.6	156
1901	16.9	151
1902	16.3	133*
1093	15.4	132*
1904	16.2	146

* Unusually favorable meteorological conditions. The summer was neither hot nor dry.

INFANT MORTALITY IN EACH OF THE YEARS 1904 TO 1908.

Deaths under one year to 1000 births in the years.

	1904	1905	1906	1907	1908
England and Wales	145	128	132	118	121
76 great towns, including London	160	140	145	127	129
London	145	130	131	116	113
142 smaller towns	154	132a	138	122	124
England and Wales, less the 218 towns	125	113b	116	106	110

From "Parliamentary Intelligence" in *The Lancet*, Dec. 11, 1909.

INFANT MORTALITY IN THE FIRST NINE MONTHS OF THE YEARS 1904 TO 1909.

Deaths under one year to 1000 births in the first three-quarters of each of the years.

	1904	1905	1906	1907	1908	1909
England and Wales	149	131	135	113	115	106
76 great towns, including London	165	142	148	118	123	114
London	149	129	133	110	110	104
142 smaller towns	157	136a	140	118	117	107c
England and Wales, less the 218 towns	127	116b	117	104	105	97d

a., 141 small towns; b., less 217 towns; c., 143 small towns; d., less 219 towns.

From "Parliamentary Intelligence" in *The Lancet*, Dec. 11, 1909.

WHAT IS DONE IN OTHER COUNTRIES.

FRANCE.

In 1904 Madame Coullet (with a capital of 10 francs) began a Restaurant in Paris, where any poor mother, who shows that she nurses her child, receives every day two good meals, free. These meals are given at 11 to 1 in the morning, and from 5.30 to 7.30 in the evening. Anyone applying also received soup, bread and cheese between 8 and 9 a.m. As M. Coullet says:

"At every meal they get soup as much as they desire, then lentils, beans, potatoes, cabbage or macaroni, as much as they wish to have. Bread, of course, in the same manner, and meat, mostly beef, sometimes veal and pork. A pound of meat is allowed for six or seven persons. Then they get cheese or a stick of chocolate." There are now five Coullet Restaurants, one has given 100,000 free meals, and all have saved many lives.

There are other efforts made in the same direction, and among these are the Consultation de Nourrissons, and an off-shoot from it called the Goutte de Lait, which is really a milk dispensary from which infants are fed under medical supervision upon sterilized milk, and where breast-feeding is encouraged, as far as possible, though many of the children are those for whom breast-feeding is impossible.

The Consultation, on the other hand, is attached to a Maternity Hospital, where the expectant mother is placed, and after she leaves the Hospital, she is required to bring the child every week to the dispensary, where it is seen by a doctor, weighed, all the particulars about it recorded, and, if necessary, sterilized milk is given. But breast-feeding is earnestly encouraged. At the Clinique Tarnier, 527 children were under supervision for two years, required by the rules, and 448 were nursed by the mother.

United States of America.

In the United States, great efforts are now being made to reduce Infant Mortality, and, as we have already seen, nowhere more successfully than in New York and Chicago.

In the first place, wherever you improve general conditions, you reduce Infant Mortality. The infant death-rate is the best test we have of the general sanitary conditions of any city. Improve the water supply, the sewerage system and the system of disposing of refuse, introduce better pavements, such as asphalt, and at once there is a decline in Infantile Mortality. Since the tenement houses have been better inspected, and more open spaces provided, and free ice has been available for some of the poorest mothers, and anti-toxin supplied by the Board of Health, and Sea-Breeze and other places for New York's poor children to get the ocean air, have been founded, of course the Infant Mortality is less. Above all, something has been done to improve the milk supply. First, sterilized milk; second, pasteurized milk; third, clean milk. And every one of these plans has been good. Every one has helped.

Here is the mortality at the Infant Asylum at Randall's Island for three years before, and six years after, a pasteurization plant was installed by the Hon. Nathem Strauss:

Before Pasteurization.

Year.	No. of Children Treated.	No. of Deaths.	Death Rate per cent.
1895	1,216	511	42.02
1896	1,212	474	39.11
1897	1,181	524	44.36

After Pasteurization.

Year.	No. of Children Treated.	No. of Deaths.	Death Rate per cent.
1898	1,284	255	19.80
1899	1,097	269	24.52
1900	1,084	300	27.68
1901	1,028	186	18.09
1902	820	181	22.07
1903	542	101	18.63

In Boston, last summer, as described in a recent number of *Hygiene and Physical Education,* the milk stations were managed by the Committee on Milk and Baby Hygiene. A trained nurse, who gives all her time to the work, is attached to each station.

"Milk is obtained from clean, fresh farms, under the supervision of the Committee, the equipment and the employees being under their rigid inspection.

The milk is furnished at cost (8c. per quart) to pregnant women, to nursing mothers, to children old enough to take whole milk, and for home modification to those mothers capable of learning how to modify the milk at home. Milk properly modified in a well-equipped laboratory under the direct supervision of a physician and a bacteriologist is also supplied, at cost (at the rate of 4 1-2c. per pint), in a suitable variety of formulæ.

No milk is furnished to sick babies without a physician's prescription, and the Committee's physicians, who meet the mothers in the Consultations, carefully avoid treating any sick babies, but refer them, instead, to the family doctor or to a hospital or dispensary. It is felt that it would be in the highest degree improper to allow the Consultations to become Clinics, inasmuch as the existing agencies of relief for the sick babies of the poor in Boston are already ample. The work of the Committee is prophylactic and educational—cultivating a field peculiarly its own and hitherto untilled—and a sharp distinction is to be kept between it and the work of existing agencies for the relief of sick babies. This attempt at solving the problem of Infant Mortality attacks that problem nearer its root and strives for that prevention which is better than cure, while furnishing, in addition, the means for making sick babies well, so far as proper food and instruction can go, in co-operation with the family physician and the Clinic. In this way duplication of relief agencies is effectually avoided and co-operation in all ways is made thoroughly practicable. Milk is furnished to well babies only after an examination of the mother shows that she is unable to nurse, or that she has not enough nourishment for her child. Where the mother has insufficient milk every effort is made to conserve and to increase what she has. Detailed directions are given her by the physician in charge of the Conferences how best to increase the flow, and milk is furnished *for the mother,* as thus an economic saving is effected, because two individuals receive nourishment. The value of the educational influences thus set in motion, for the present and for the future, is incalculable.

It is found not infrequently that a mother applies for milk for her infant, when upon examination she is shown to have an abundant supply of breast-milk, but owing to the necessity of earning her and its living she must wean the baby and go out to work. For these cases the Boston Provident Association furnishes a pension so that the mother may remain at home and nurse the infant. This is one respect in which the Boston work excels, it is believed, that of any similar organization in the world.

Finally, for those babies who need supplementary or exclusive artificial food, or who come with a physician's prescription, milk is furnished and this milk is given out daily by the trained nurse in charge of the station. Ice is also supplied to those who are unable to secure it, in order that the milk may be kept cold at home. Inexpensive ice-boxes devised for this purpose can also be obtained at cost at the stations.

An outfit for the home modification and pasteurization of milk has been prepared and will, together with simple printed directions, be furnished at cost to the mothers at the stations.

All mothers who secure milk at the stations are required to bring their babies once a week to the Conferences or Consultations. To these Conferences are also encouraged to come expectant mothers and the older girls, who in many cases are obliged to be "little mothers," to the younger children. This has seemed advisable in order that the benefit of the instructions given may have a wider circle of usefulness.

The Consultations usually, but not always, begin with a short general talk to those present. This is not always practicable and sometimes the general remarks are deferred until the end or omitted altogether. Individual attention is considered much more important. Sometimes a demonstration is given instead of the talk. In the talks brevity and clearness are aimed at. They are given by physicians who speak in the native tongue of the mothers present. The language used is as simple as possible and only the most important points are emphasized, all unnecessary details being omitted. An attempt is made to give the reasons for the advice and illustrations are used which are likely to appeal to the common sense of the mothers. They are then encouraged to ask questions, however simple, and it is in this way that some of the most valuable points are brought out and enforced. Regularity of feeding, bathing, clothing, fresh air—these are some of the topics dealt with. A talk would run somewhat as follows: "A large number of babies die every year in Boston from 'summer complaint.' Most of these babies could be saved if the mothers knew just how to feed and care for them. That is what we have come here for, to tell you how to care for your baby. Ask questions of the doctor, not of some neighbour. The doctor has studied babies for many years and his advice is safe to follow. That of the neighbour may not be.

"Do not dress your baby too warmly in the hot weather. Have the clothing thin and light. Consider it as drapery rather than clothing. The baby will not 'catch cold,' if the clothing is reasonably light.

"Let the baby kick. Have the arms and legs free. Babies love to kick. That is the way they get the exercise they need. Do not bind up the chest. If the chest is bound tightly the baby cannot breathe easily.

"Bathe the baby every morning in lukewarm water and in hot weather sponge it off two or three times each day.

"Don't allow the napkins to remain on the baby after they are soiled. If you do they will make the skin red and sore.

"Every mother should try to give her baby the breast. It is better for the mother as well as better for the baby. Ten babies die on the bottle to every one on the breast. Even if you have enough for only two or three feedings, still give the breast and help out with the bottle.

"If you have to give the bottle be sure that you keep the milk cold until you are ready to warm it for the baby. Be sure to keep everything very clean. If the bottles and the nipples are not clean the baby may get sick and may die.

"In feeding the baby have the baby in the right position. The nurse is showing you how to place the baby to be fed.

"Feed the baby regularly. If you do not you will upset the child's stomach. How would you like to have your meals every hour? You would soon lose your appetite and detest food. It is easier to upset a baby's stomach than a grown person's. If the baby cries he may not be hungry—he may be thirsty. Give him water. He needs it. But give no milk except at the times ordered. If he doesn't take it all in 20 minutes take the bottle away. And don't use what is left in the bottle. Throw it away and use fresh milk next time. If the baby is asleep when the time comes to feed him, wake him to be fed.

"Do not give the baby tea or coffee, or a 'taste' of the things you have to eat. One taste may give the baby diarrhoea and from the diarrhoea it may die.

"If the baby has green movements it is sick. Stop feeding and give water instead and take it to the doctor. Don't wait because your neighbour tells you it is only the teeth. It probably isn't the teeth, but the food. Get advice from the doctor.

"Here is a baby that has gained only 3 ounces in the last 2 weeks. This baby has been fed every hour. That is wrong. The mother was told to feed the baby every 2 hours, but she thought he was hungry and fed him every hour and he has not gained. If she will feed the baby every 2 hours he will gain faster. Let us see how much he will gain by next week.

"Here is a baby that is vomiting. It is on the breast. The mother has no regular time for feeding but gives him the breast every time he cries. He cries all the time. He is a very fussy baby. He should be fed regularly every two hours. The mother is going to try regular feeding and let us know next week how the baby has improved.

"This baby is 6 months of age. He has a severe diarrhoea and is 'vomiting everything he eats.' He looks sick. His mother goes out to work and his older sister cares for him. The day before yesterday, she gave him a taste of ice cream from one of the little cones that the children buy. The baby liked it so well that he was given seven of them, which he ate, one after the other. That is why he is now sick. You should not give your young babies such things to eat. You should give nothing but milk except by the advice of the doctor."

The demonstrations consist of the method of bathing and sponging the baby, the cleansing and care of bottles and nipples, the preparation of barley water, and kindred subjects.

The value of the social interchange of experience among the mothers themselves is an important item to be considered.

At each Conference each baby is stripped, weighed by the nurse and examined by the physician and records made of the weight and the condition. Valuable lessons are learned from these records. If the child is gaining properly, the mother is encouraged to persevere. If the gain is not sufficient or the baby is vomiting or having diarrhoea, an effort is made to find out the cause and to remove it. Mothers are constantly found who give their infants tea, coffee, bread, cake, soup, beer, and wine. Special instruction of each mother is aimed at in these Conferences and individualized advice is always given. This necessitates in some cases long hours for the physicians and nurses, but so great is the interest manifested in the work that all the time necessary is ungrudgingly and gladly given. The nurses spend the time which they have free from the dispensing of the milk and from the Consultations in visiting the homes of the patients and seeing that they do actually carry out the advice given by the physician. They give the mothers instruction and show them how to do the necessary things at home. One nurse got so interested in a weak baby, whose mother was absolutely incompetent, that she visited the house regularly three time a day for several weeks. Without her devoted care the child must have died. In fact without the conscientious follow-up service of a well-trained nurse, this whole plan would lack a great part of its efficiency.

A large printed card of instructions has been prepared and distributed in the homes. This is issued in three different languages. Printed slips of directions in several languages have also been prepared and are in use.

A model set of infants' clothes is on exhibition at each station, so that mothers may copy them.

The nucleus of a reference library on infant mortality and the effect of milk thereon, and of the milk stations in reducing it, has been formed, and contributions are requested of books, articles and reprints, which will be kept properly arranged and indexed, and will be available to physicians and all others interested. The need of such a collection is self-evident.

It will be seen on reviewing the necessary means for diminishing infant mortality as deduced from the known facts at our command, that this movement supplies them all. Education of the prospective mother, of the mother, of the dairyman, of the public; help in the nutrition of the expectant mother; guidance of the mother in her treatment of the new-born babe; encouragement of breast-feeding; furnishing where necessary of a pure milk properly modified, drawn under proper conditions from healthy inspected cows; continual oversight of the infant, with advice ready when needed to prevent illness; continual, educational, uplifting influences, at the Conferences and in the homes; all these this system supplies in the most logical and direct way.

It would seem that such should appeal to every person interested in the betterment of his fellows. It is not an untried system, but has been operated successfully in other cities.

The enthusiasm that soon pervades everyone brought in close contact with this work is one of its most remarkable features and vistas of its immense possibilities are "opening more widely, more surely, more radiantly," day by day. It is evidently destined to lead to yet undreamt-of good. Just as the Medical Inspection of Schools had for its original object merely the early detection and isolation of contagious diseases, but has by a natural growth become so important a factor in the betterment of all that pertains to school life, so this attempt to prevent disease by inspection and supervision of infants, (who really need such supervision much more than older children, as witness the comparative mortality rates) will doubtless lead to much more than we at present realize. We feel that we are building better than we know. And if it be true, as was said by Phillips Brooks, that "He who helps a child helps humanity with a distinctness and a definiteness which no other help given to human creatures can possibly give," surely here is one of the most logically worthy objects in the wide world for the exercise of practical philanthropy.

Since the Consultations were established under Dr. Conally's direction in June, one of the five hundred babies has died. There has been a fifty per cent. increase in the demand for the modified milk furnished at cost by the committee—this in spite of greater care than ever to prevent the early weaning of babies whose mothers can be made to nurse them. During the month from June 24th, the date of opening the first Consultation for mothers, to July 24th, 1909, the number of deaths of babies in Boston was 104 less than during the corresponding period of 1908." This plan, as outlined above, now in operation in Boston, under the direction of Mr. Walter E. Kruesi, is perhaps the best and most effectual. Of the value of such work there can be no doubt.

The Milk Committee of the New York Association for improving the condition of the poor, has conducted a campaign which has already had splendid results. Dr. Darlington, the head of the Department of Health in New York, has under him a corps of physicians and nurses, who, during the school vacation, devote themselves wholly to Health Department work, cheifly for the babies. A Register is kept of every baby in New York, and mother and baby are visited, advised and helped.

Conference at Yale University.

On November 11th and 12th, 1909, the American Academy of Medicine held a conference on Infant Mortality at Yale University, where an impetus was given

to the study of the question and there was gathered a large number of those interested in the question, citizens, physicians, philanthropists, doctors, nurses, educators and others. Several of the conclusions reached have already been referred to, especially those in Dr. Devine's paper. A brief list of some of the more important papers follows, and it will be seen at once that this congress was a remarkable one. In point of attendance and interest, it would rank high, but its significance includes also the plans suggested, and the far-reaching character of its conclusions. The personnel of the meeting was unusual. Not talkers, but workers, gathered there. Among the papers were:

The Relation of Alcoholism to Infant Mortality, Dr. J. H. Mason Knox, Jr., Associate in Pediatrics, the Johns Hopkins University Medical School.

The Relation of Tuberculosis to Infant Mortality, Dr. Clemens von Pirquet, Professor of Pediatrics in the Johns Hopkins University.

The Relation of Syphilis to Infant Mortality, Dr. Richard A. Urquhart, Instructor in Pedriatrics at the Johns Hopkins Medical School, Baltimore.

Institutional Prevention of Infant Mortality, Mr. Homer Folks, Secretary of the New York State Charities Aid Association.

In institutions for providing a home for presumably well infants mortality has always tended to be very high. Of 28,436 babies received at the St. Petersburgh Foundling Hospital, 24,272 died, 85 per cent. In such institutions mortality has been reduced, but is still excessively high, not more than 50 per cent. surviving amongst the best institutions.

This is not from neglect. Artificial feeding is what kills babies in infant homes. Babies and their mothers should be kept together.

Hospitals for sick babies are necessary and valuable.

Providing Situations for and Otherwise Assisting Homeless "Mothers with Their Infants."

Miss Mary R. Mason, Agent of the Committee on Assisting and Providing Situations for Mothers with Infants, New York City.

Abstract: The death-rate is frequently 90 to 100 per cent. when babies are separated from their mothers.

Agencies find it entirely practicable to place women with babies in domestic service, chiefly in the country or small towns, with wholesome environment. Increasing stringency in the domestic service market increases desirable opportunities. The Philadelphia Society, 1908, placed 609 mothers. In 15 years the New York Agency has provided over 7,000 situations. Statistics are difficult to present as the situation is usually only temporary (until father obtains work, or families are reconciled; many widowed or unmarried marry). In three years (1900-1902) of the mothers kept track of four-fifths of the babies lived and were in good condition; one-fifth died or were in poor condition.

Agencies need closer co-operation with maternity hospitals to induce mothers to keep, not abandon their babies; more temporary homes; more places for training incompetent mothers. The plan of keeping mothers and babies together is susceptible of much wider application.

National Association to Prevent Infant Mortality.

At the conclusion of the Conference, it was decided to organize a National Association for the Study and Prevention of Infant Mortality, which was accordingly done.

The directors as elected held a meeting and elected officers and arranged to hold the first meeting in Baltimore some time next fall. Dr. J. H. Mason Knox, Jr., of Baltimore, was elected President; Dr. Henry I. Bowditch, of Boston, Secretary. Prof. Charles R. Henderson, of the University of Chicago, was named as the President-elect.

Great Britain.

In October, 1905, an International Congress on Infants' Milk Depots was held in Paris, and among others there were present, Mr. Benjamin Broadbent, Mayor of Huddersfield, and Baillie W. Fleming Anderson, Chairman of the Health Committee, of Glasgow. On their return, these gentlemen used their influence to have a National Conference on Infant Mortality summoned in Great Britain. The result of their efforts was the First National Conference on Infant Mortality, under the patronage of their Majesties King Edward VII. and Queen Alexandra, in Caxton Hall, Westminster, on June 13th and 14th, 1906. The President of the Conference was the Rt. Hon. John Burns, M.P., who delivered an inaugural address of a memorable character. After pointing out that in the last 50 years the average age of engineers has been extended ten or twelve years, he adds, "In that period of fifty years, the infant mortality has been stationary, or slowly declining. Wealth has increased, but the infant has not shared in it; physical comforts undoubtedly have enlarged, but the weakest, the smallest, and the dearest to us all, alone bear unduly the penalty and the burden of death." Mr. Burns' chief remedy for Infant Mortality is, First, "Concentrate on the mother. Let us glorify, purify and dignify motherhood by every means in our power. Let us see to the nursing child in every way. Nourish the mother, you feed the child."

The Conference produced a profound impression in Great Britain, and doubtless this influence, and the influence of a second Conference of the same character, in March, 1908, again under the patronage of their Majesties, and under the Presidency of the Rt. Hon. John Burns, had a determining part in the Children's Bill, (brought in by Mr. Herbert Samuel, M.P., a leading member of the Conference), recently enacted, which has special provisions in regard to Infant Mortality. Other legislation mentioned by Mr. Burns, in his President's address at the second National Conference, as being closely connected with the work of the Conference, were as follows:—

The Medical Inspection of School Children.
The Optional Feeding of School Children.
The Butter and Margarine Act.
Prohibition of Night Work for Women.
Laundries' Hours' Act.
Notification of Births Act

and the attention given to legislative work in other subjects, particularly in regard to milk. Mr. Burns also draws attention to the fact that where illiteracy prevails most among women, the Infant Mortality rate is proportionate; and said that whereas in 1870, 199 women who were married, signed their marriage lines with a cross, only 20 do so to-day.

WHAT WE CAN DO TO PREVENT INFANT MORTALITY.

I.—Nursing.

It is evident, and it must be made known and thoroughly taught and impressed upon everyone, that the great and most effectual and important means of lessening infant mortality, is that the baby should be nursed by the mother. The mother needs adequate nourishment, skilled attention and protection from overwork. Her great work is the child until it is a year old at least, and if in want she should be supported (see Boston plan) by a pension while she is doing this, and both she and the child should have medical supervision.

We forget that good nourishment is the urgent necessity of a nursing mother. Hutchinson says that—

"The chemical energy expended daily in nursing an infant six months of age, would be sufficient to raise a ton weight 800 feet high—or more than twice as high as the top of the dome of St. Paul's."

Why Does a Mother Not Nurse Her Child?

1.—Ignorance—She does not know that it makes all the difference to the child. When she does know, she nurses it. Most mothers think cow's milk is just as good. We must tell her that is not so.

2. Because the mother-in-law, or the sister-in-law, or the nurse, or the neighbour, or some other meddling busybody, has told her not to, etc. Many people ignorantly give this advice. We must give her skilled medical advice.

3. Because, in a very small proportion of cases (not more than 1 in 100, or 1 in 1000) she cannot nurse her child, or, (rarer still) the milk does not agree with the child. Here again she needs skilled medical advice.

4. Because she has to work and she cannot take the child with her or come back to it. This is something we must set our faces against as a public danger. Everything possible must be done to avert this calamity to the child, and prevent the community making the blunder of allowing it. *It should not be allowed to happen. The mother should have a pension, if necessary, to take care of the family. She is the one to save the baby, and the only one.* Later on, if the baby is bigger, a few months old, and the mother must work, everything should be done to improve conditions for her. A nursing mother, if she has to work, should have short hours, and lunch early, and generally good conditions. If sanitary conditions were good—light, air, and cleanliness—it would be much better.

In England, the Factory Act of 1901 states: "An occupier of a factory or workshop shall not knowingly allow a woman or girl to be employed therein within four weeks after she has given birth to a child."

In Mulhouse, Mr. Dollfus, who owned a large cotton mill, established a fund to which all the married women subscribed, and he personally contributed. Each woman subscribing received from the fund sufficient for her support during the two months following her confinement. On resuming work at the end of this two months, she was granted time at mid-day to return home and care for her baby. This procedure alone reduced the infant mortality more than 50 per cent.

In France and Italy the advantages of breast-feeding are recognized by the government. In France it is common in factories to post placards describing the advantages of breast-feeding and offering every opportunity to women to nurse their infants, including special rooms; and the women are allowed leave of ab-

sence at intervals for this purpose. In Italy such a room is obligatory in every establishment employing more than 50 women.

The chief advantage of Infants' Milk Depots and Consultations is, that they encourage nursing by the mother, and give skilled medical supervision and nourishment for the mother.

At Varengeville before the establishment of the Consultations des Nourrissons not a single mother breast-fed her own child. At the end of the first year the percentage of breast-fed children was raised to 47.5 and at the end of the second year to 75 per cent.

At Saint-Pol only 22 per cent. of mothers breast-fed their own children before the establishment of the Consultations; at the end of the first year the percentage was raised to 35 per cent. and at the end of the second year to 77 per cent.

At Dr. Bresset's Consultation in the rue St. Dominique in Paris only 40 per cent. of mothers breast-fed their own children before the establishment of the clinic; at the end of the first year the percentage had been raised to 63 per cent., and at the end of the second year to 81 per cent.

Before the establishment of Dr. Bresset's Consultation in the rue Oudinot, 61 per cent. of mothers breast-fed their own children; at the end of the first year this percentage had been increased to 67 per cent., and at the end of the second year to 71 per cent.

The close relation between the increase in the number of breast-fed children and the decrease of infant mortality indicates the true responsibility of a milk depot. In its normal development it should sell less and less modified milk to babies and more and more whole milk to mothers; becoming ultimately a clean milk depot from which food is fed through the mother to the child."

II.—Education.

A campaign of education should be undertaken forthwith, to arouse public sentiment, to awaken interest and to enlist the co-operation of patriotic and able citizens who would guide the movement to good results. The clergy, the various societies, the medical profession and others are much needed for this. Practically, we expect the ideal mother to know everything by instinct, without giving her any chance to learn. We might much better expect her to read by instinct, for the alphabet can always be found not far away. We teach reading, and we leave parenthood to come by chance. It does not so come, and there is great need that our people, most of whom are to be parents, should be educated with this great privilege and responsibility and power in view. It would almost seem that as yet we have barely recognized the fact that instinct has lapsed in us, to give play to intelligence. Humanity could never have been evolved at all if mothers did not love babies. But of all details she is bereft. She has instead, an immeasurably greater thing, intelligence; but whilst intelligence can learn everything, it has everything to learn. Instinct can learn nothing, but is perfect from the first, within its impassable limits.

"The mother cat not merely has a far less helpless creature to succour, but she has a far superior inherent or instinctive equipment. She knows the best food for her kitten. She does not give it "the same as we have ourselves," but her own breast invariably. None of us can teach her anything as to washing her kitten or keeping it warm. She can even play with it, and so educate it, in so far as it needs education. There are mothers in all classes of the community who should be ashamed to look a tabby cat in the face."—*Dr. Saleeby.*

We educate and train and instruct for every other possible calling and responsibility, and as yet we have failed to evolve a training for the vocation of parenthood, the most important of them all. As a nation we have only one chance to do this. It is in our national schools.

When the mother-to-be has become the mother-that-is, she is a great deal besides. She is often cook and seamstress and laundress and housekeeper and all. There is no apathy on the part of any mother one ever meets as to the welfare of her child. But she does not know. How is she to learn? The school seems the only place. And here the school doctor and the school nurse will come in with the love of the work, which is the mark of the truly professional man or woman; they will find a way, without hurting the feelings of the most modest child, in tactful, and restrained and scientific language, to impress on the minds of boys and girls about fourteen years of age, before they leave our public schools, the most important principles on which our duty to our heirs and successors, depends. In Germany, it is customary before boys leave school, to send a notice to the father that a lecture is to be given by a medical man on such important topics, and the father is asked to say if he is willing that the boy shall attend, and invited to attend himself. Similar lectures should be given to girls by a medical woman. Think what an opportunity we miss when we do not avail ourselves of the one chance we have to tell the youth of the nation things the future parents ought to know. How quickly we could tell everybody, for example, the supreme importance of the nursing of children at the mother's breast, if we took this plan.

Canadians should covet the reputation of having good children and being good parents. It is true patriotism.

III.—Interest.

The greatest lack of all is a lack of interest in this problem. It is a great safeguard for the people when rulers and influential citizens have lived a right and natural life and when the baby fingers of child or grandchild or stranger child can reach the heart of those who guide public policy.

In San Francisco last summer, a wealthy woman looked at her maid's baby and saw how pale and thin he was in contrast with her own chubby child. She found that the poor child was being boarded by the Associated Charities, and they could not afford to buy certified milk. She brought the matter before a College Women's Association, to which she belonged—the Association of Collegiate Alumnæ. They took the matter right up, planned a campaign, issued 2,000 Coin Cards with this on one side:

"When the fog rolls in from the ocean, and the wind begins to blow,
And you pack up your belongings for the seashore or the snow;
Won't you leave behind some money for milk that's clean and pure,
For the little helpless babies of San Francisco's poor?"

And this on the other:

"Certified milk means health and a fighting chance against tuberculosis and other diseases. Certified milk means a decreased infant mortality. Surely the little ones deserve a chance. Help us provide certified milk for the babies who must otherwise depend upon milk from impure sources."

In two days the coin cards brought in $55.44. What did it? The kind eyes of the wealthy mother that looked on the other baby.

Nobody is too busy to take interest in this, the nearest question of national welfare. The Bishop of London, the Rt. Rev. Winnington Ingram, is said to be the busiest man in the world. In July, 1909, he found time to go to the St. Clement's Maternity Home, at Fulham, in that East End of London he knows so well, in order to encourage the efforts made there to lessen infantile mortality, which is there very great. Prizes were offered to all the mothers whose infants showed care and attention, and these were distributed by one of the Princesses of Teck, assisted by the Bishop of London. Seventy-eight prizes were given, most of which were articles of clothing, but two of them were the well-known collapsible carriages. The Bishop took one of the carriages, placed a prize winner in it, and wheeled the baby along the terrace, followed by the Vicar, who did likewise. The Bishop, in his speech, said that he could not imagine a more delightful scene than the one they were witnessing that afternoon. It meant a great deal both to the nation and to the church. He had been for years trying to back up the efforts both of Miss Heatley and her excellent staff at the Maternity Home, and of others, in seeing that the children of the nation were properly feed and looked after in their early years. No one who saw those fat, rosy, smiling, jolly babies could fail to acknowledge that a great improvement had been effected. He loved to see their dear old church in the thick of everything that was for the good of the people. They had to learn from their Master to care for the bodies as well as for the souls of the people, and he could not imagine a more beneficent work for the church to put her hand to than to help people to bring up their children, not only fat and rosy, but good Christians also.

Is there any reason why someone in every parish in Ontario should not do what a parish priest did in Quebec?

In Vol. 9 *Bulletin Sanitaire,* published by the Provincial Board of Health of Quebec, we find that he noticed the large mortality among infants in his parish and came to the conclusion that the ignorance of their mothers and lack of proper care were principally responsible for the sad results. Speaking from the pulpit, he pleaded with the mothers of children about their duties towards their offspring and enlarged on the proper care of infants.

Before the sermon was given to the mothers 19.78 per cent. of new-born children died in that parish; since then 8.53 per cent. have died; a saving of 18 lives in one parish in two years (1907-1908).

The greatest agency to prevent Infant Mortality is the sympathetic, efficient experienced visitor, who reaches the mother if possible before the baby is a day old. The question of nursing or no nursing is generally settled one way or the other within the first 24 or 48 hours.

IV.—Efficiency.

We always come back to the personal equation. The efficient person, the adequate and strong character, the person of principle and affection, will succeed where the weakling, the unemployable, untidy, unthrifty, good for nothing, will never succeed.

Dr. Hope, of Liverpool, took 874 families, consecutively, because an infant had died in each family, and found that the total number of children in these families was 3801, and that 1895 had perished—practically all in infancy—a rate of 498 per thousand. Of such is one special case, Mrs. E., who had 14 children, and 10 of them died in infancy, all of them being artificially fed. She is an incapable woman and regards the death of her children as an inevitable matter.

On the other hand, Mrs. S., of No. 6 T. St., has 7 living children, all healthy, the youngest two being twins of four months old. Mrs. S. is a genius. The father is a dock labourer, and his wages are about 12s. per week. The house is very clean and comfortable, and the children are well cared for, those of school age attending school. The mother is nursing the twins regularly, and receiving milk for herself from the Corporation Milk Depot, and it is a striking example of what can be done with very little money, when it is not wasted in drink and gambling.

V.—Notification and Registration.

Births should be notified at once. The new English Act provides that this must be done within three days. In this Province the limit is 30 days. In Huddersfield, all births practically are notified within 48 hours. The best way would seem to be to give a fee of 1s. or 2s. for notification. It is worth it. Nothing can be done until we know where the babies are, and when they arrive. Then we can send visitors (skilled and experienced—the mothers know too much to listen to theorists) and get into touch with them at once and give printed information and other information. That is what our enterprising friends, dealers in "Baby Exterminators" (patent foods) do now. They send to every mother as soon as the birth appears in the newspapers, much printed matter, with congratulations and pictures and advice, most of it bad.

VI.—Infant Mortality Before Birth.

Probably, as soon as we are educated a little farther, the doctor should also be requested to report, or notify all cases of abortion or miscarriage. There are grave reasons for this. It is only too well known that in this Province we have disgraceful instances of criminal abortion, every little while.

Always, on a death certificate for a child under a year old, it should be stated how the child was fed, in detail, and how long it was nursed.

The number of births and deaths should be reported weekly to the Provincial authorities and published in the newspapers. This would stir up everybody and keep up public interest, especially where improvement may be noted.

The visitor's work in connection with the Health Department is most important. One fully qualified visitor is required for about every 1000 infants registered in a year.

VII.—Infectious Diseases.

Protection of nurslings against infectious diseases is very important.

Free diphtheria anti-toxin for poor children should be provided by the Health Department.

VIII.—Over-Crowding.

Overcrowding is present in at least one city in Ontario. There are families living in one room. This problem should be dealt with at once. It causes Infant Mortality.

IX.—Institutions.

Institution children whose mothers are dead or absent, should have a Nurse-Mother, who will at least sometimes hold the babies in her arms.

Babies should not be allowed to remain in Institutions. Every effort should be made to get a home for the mother and the child. Nurses should visit these

homes regularly, and the infants should be carefully protected by law. No Institution should be allowed to take a baby separated from its mother, (often before she has seen it) for $50 or any other sum. It is said that this is done at present in certain places in Ontario.

X.—Alcohol.

Alcohol is poison to a child, and if the mother drinks it, the baby is poisoned. This should be made known.

XI.—Parental Responsibility.

Parents' responsibilities, especially in the case of fathers, should be brought home to them. The great attention directed to this subject in Britain, France and the United States, has enforced and strengthened the sense of parental responsibility.

XII.—Milk.

At about nine months of age, the baby should begin to use clean cow's milk. Sometimes babies have to use it sooner. Improvement in the milk supply alone has been known to cut the infant mortality rate in two. We urgently need legislation defining clean milk, giving a legal standard, both chemical and bacteriological, and requiring a nourishing milk with a low bacterial count and clean. The provision of free ice in summer is very important for poor mothers. Milk Depots are good, but Consultations are better, and their success is measured by the small quantity of milk they sell and the large number of nursing babies and mothers that come to them.

XIII.—City Conditions.

Conditions in the city must be made as nearly like good country conditions as possible.

More parks and open spaces are needed, more workingmen's houses on the outskirts of the city. More chances for holidays and fresh air funds, and more sympathetic neighbourliness, a matter in which the health visitor can help.

XIV.—Foods and Drugs for Babies.

Foods sold for babies should be labelled in accordance with facts, and not described as "a perfect substitute for mother's milk." These foods should not be used till the baby is nine months old at least, and then only by the advice of a physician.

Mrs. Winslow's Soothing Syrup should be marked in accordance with its contents. It contains opium.

Steedman's Powders should be marked as containing calomel and starch, and so with similar preparations.

Conclusion.

Looking back only three years, it will be seen how great has been the progress in Britain about Infant Mortality. It is far ahead of Ontario. England, with an infant mortality rate of 132 per 1,000, is far ahead of Ontario; and Scotland and Ireland are farther ahead still. We have not even the figures for 1908

published, and in 1907, Ontario had an infant death rate of 150. London itself has an infant death rate of 113, and England is a country where the conditions of life are not easy, "where industries flourish, where mothers labour, and where babies decay."

"Mistress in My Own."

It remains for those who proudly say,

"Daughter am I in my Mother's house,
But Mistress in my own,"

to set that house in order.

The lines are fallen unto us in pleasant places, but our goodly heritage will go to the sons of the stranger, unless we put our hands and our minds in earnest to the work of rearing an Imperial race. The Jews have discovered the secret of National Immortality, and what is it? It is very simple. "Take care of your children." The future of our Province, the future of our country, the future of our Empire, the future of our race, is signified by the same sign, and that sign is a child.

Before the babe this year newly-born, or yet unborn, takes his first step and speaks his first word, the question of vigour or degeneracy is almost settled for him. The keys that unlock the problem of Infant Mortality, are the keys of National and Imperial hope and power.

INFANT MORTALITY

SECOND SPECIAL REPORT

BY

DR. HELEN MacMURCHY

TORONTO

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Infant Mortality.

THE HONOURABLE W. J. HANNA,
Registrar-General for Ontario.

SIR,—I have the honour to submit, in accordance with instructions, a Second Special Report on Infant Mortality, and to state in regard to the first Report, that as far as can be ascertained, it seems to have been the first instance in which such a report was issued by any Government. There have been special enquiries and reports *re* the Birth-Rate, and also articles on Infant Mortality incorporated in many reports, but this seems to be the first instance in which a Government ordered a Special Report to be made, which was intended mainly to arouse popular interest in this important subject. To this fact no doubt its success was largely due, the entire issue being very soon exhausted. It had a good circulation in Ontario, and also in the other Provinces. Requests for copies came from as far away as Victoria, B.C., and some went to Halifax.

A good many enquiries were also received from the United States, especially from libraries and from the Russell Sage Foundation (Department of Child Helping), as well as from the American Association for the Study and Prevention of Infant Mortality. The officers of the last named Association were especially friendly, and signified not only their own interest in the Report and approbation of it, but mentioned that the Press Clipping Bureau employed by them had sent them a number of press references to it. Officials of the United States Government at Washington also wrote to the Department with reference to the Report, especially Dr. Cressy L. Wilbur, Chief Statistician to the Bureau of the Census, Department of Commerce and Labour, who refers in his letter to the statement made on page 34 of the Report—"Nothing can be done until we know where the babies are, and when they arrive," and adds "This the key to the situation, so far as the Vital Statistics side is concerned."

Members of the medical profession in Ontario have also written to the Department about the Report, and some of the medical journals, as well as the newspapers, have drawn special attention to it. Among the experts who have expressed approval of the efforts of the Department to draw attention to this subject, are Walter Kruesi, of Boston; Dr. Richard Cabot, of Boston, and Mr. Benjamin Broadbent, of Huddersfield, England, who made himself famous when he was Mayor of Huddersfield by cutting down the Infant Mortality rate from 184 per thousand to 97 per thousand.

A Canadian journalist living in Orillia, sent a copy of the Report to Mr. Broadbent, and Mr. Broadbent wrote from his home in Huddersfield to this Department saying, "Have read it with the greatest possible interest and delight."

A COMPLEX SUBJECT.

Infant Mortality is such a complex subject that it may be approached from many points of view. There is no part of Sanitary administration which does not bear a relation to it, and again, there are certain aspects of it that appear very simple.

The Poor Man's Baby and the Rich Man's Baby.

Take the difference between the death rate of the children of the poor and the children of the rich. In Erfurt, Germany, Wolf's Statistics show:—

505 Babies out of 1,000 died under 1 year old among the working classes.
173 Babies out of 1,000 died under 1 year old among the middle classes.
89 Babies out of 1,000 died under 1 year old among the rich classes.

In Birmingham, Dr. Robertson, M.O.H., stood up in the Council Chamber last April and told them that within two miles of where he stood there died in 1909, between 1,500 and 2,000 babies; good, robust, "thick-set" English babies, who ought not to die. And that the Infant Mortality in the upper and middle classes was 50 per thousand, but among the poor it was 200 per thousand.

Dr Robertson continued:—What was the cause of all this mortality? The work done in Birmingham, and in other places during the past 15 or 20 years, had led to a general opinion beyond which they could not go, that it was largely due to the ignorance of the mothers. Therefore, to get rid of the high mortality the mothers must be educated. But the education of mothers was an exceedingly difficult matter. One frequently heard statements about the callousness of mothers, and the failings of a few were attached to the whole group of mothers in the poorer classes. This was not so. Anyone who had worked among the mothers of the poorer classes knew that they had just as much love for their babies as those of the better classes, and that they would take advice readily from anyone they recognized as capable of giving advice. In all our towns there was now less opportunity than ever for the classes to mix with one another. He thought that was one of the great blots of the age. So many of the towns had a west end and so many had an east end, to which very few of the west-end people ever went. And east-end mothers were getting careless and thriftless because they had not before them the example of more careful, thrifty, and intelligent people. It was highly important that the west end should mix with the east end. Referring to the poverty question, Dr. Robertson said children were damaged in a way that could not be ascribed to the poverty of the mothers. A bottle-fed baby in a poverty-stricken house got watered milk. And the mother in a poverty-stricken home would give practically all the food available to the husband, because he had to go out and work; she would give all she could to her children, and would leave a quite insufficient quantity for herself. A poor mother with a family was the most self-denying person he knew of. Something must be done for these mothers.

Not Too Expensive.

It must not be made too expensive to bring up a baby. That is bad for the race. A mother and father, with good milk, good air, and good water, and enough sense to use them, can do it. We do not need

The Sterilised Baby.

Miss Betty Tanner, the five year old Californian heiress to £5,000,000, is known as the "sterilised baby," on account of the extraordinary precautions taken to ensure that her health should not be endangered. A mansion has literally been built around her, near Los Angeles, a city of perpetual summer. The ground has been sterilised, and the same precaution has been taken with regard to every bit of material used in the building. The air that the baby breathes, her toys, food, and clothes are thoroughly antisepticised before they are allowed to reach her.

The Canadian Baby.

What we want is the ordinary Canadian baby. We have the fathers and mothers and we must see that they can get good milk, good air, and good water.

Poverty Kills the Baby.

The destruction of the poor is their poverty. The rich baby lives—the poor baby dies. Certified milk costs eighteen cents a quart to-day in Toronto. We cannot give everybody certified milk, but we *must* see that the poor man's milk is good enough to keep his baby alive. What is the use of milk legislation or Medical Health Officers, if they cannot do that?

The Edwardian Era.

Real efforts are being made in England now to prevent Infant Mortality, and with equally real success. Everybody helps now. This is one of the great movements of the Edwardian era—the movement to prevent Infant Mortality. When the 19th century and the great reign of Victoria ended, nobody but statisticians and sanitarians or other theorists talked much about Infant Mortality, and the Infant Mortality rate in 1901 was 154 per thousand in England. In 1909 it was 109 per thousand. That is something.

Do Something for the Mother.

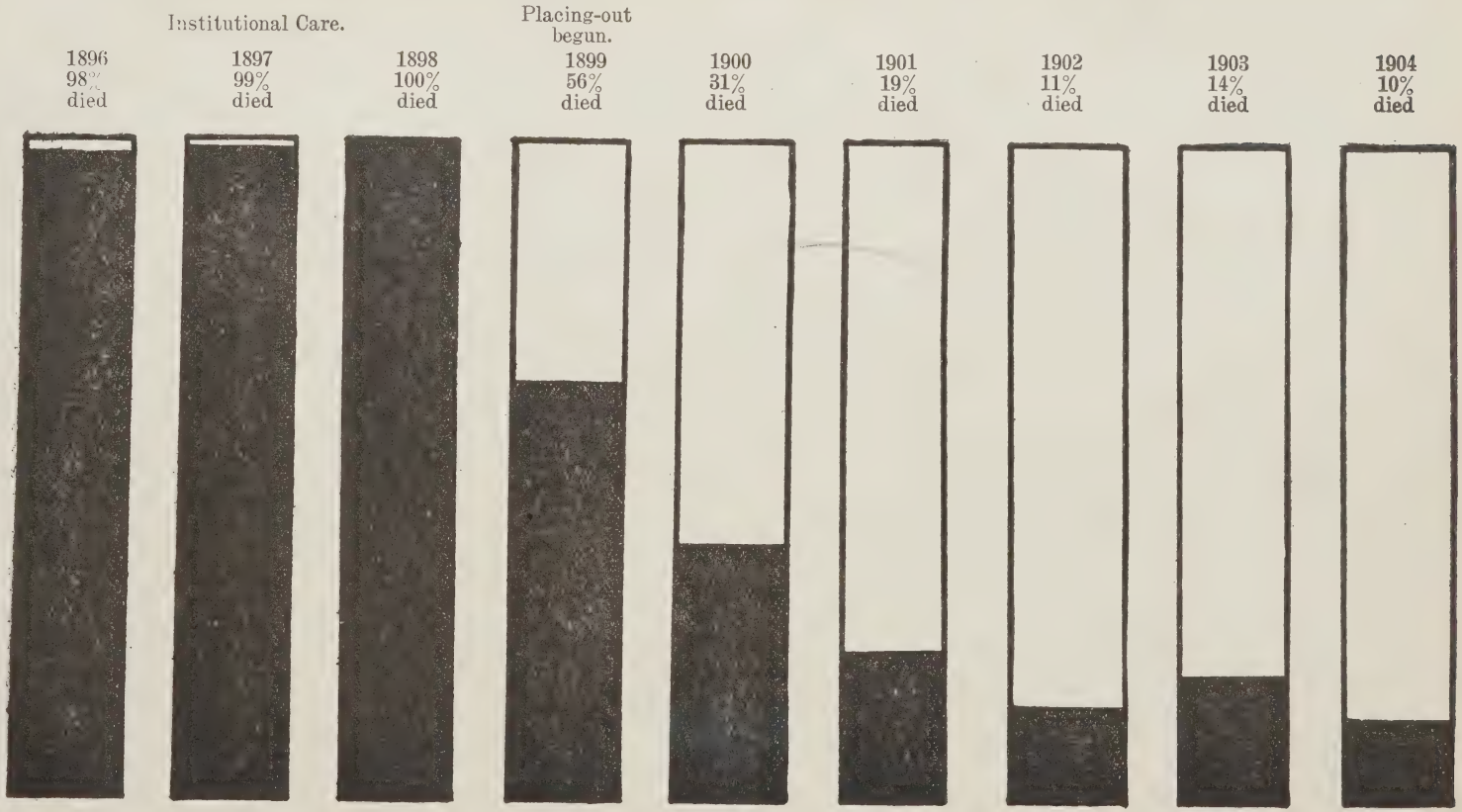
It is the mother that we should do something for. She is the one, and the only one, who can save the baby. If the "own mother" is dead or gone, then adopt a mother for the baby. Australia does it. Why not Ontario? It is the mother that the Government should "get behind." The Russell Sage Foundation, Department of Child Helping, publishes the following diagram, which needs no comment. The Institution is no place for the baby.

The same thing is shown by the following extract from an article appearing in the Journal of the American Medical Association, October 22nd, 1910, by Henry Dwight Chapin, M.D.

The Work of the Speedwell Society.

The hygienic surroundings have a most important effect on the nutrition of the feeble infant. If the environment is faulty the best care and feeding will usually prove ineffectual. These patients require an altered environment that will furnish plenty of fresh air, good general hygiene and individual care. For this reason they never do well in institutions, no matter how carefully and scientifically they are there fed. They cannot assimilate the best of food without plenty of good air to assist in its oxidation; oxygen is as necessary a food for them as protein or fat. It is only individual housing and care with constant oversight that can accomplish good results. Even an ignorant but kindly woman in a home can often get better results than a trained nurse in a hospital with a series of cases to look after and a stated routine to enforce. This is especially true in charitable work, where relief of feeble infants can be much better accomplished along the lines of family life with individual supervision instead of the collective life with institutional methods.

ONE SOCIETY REDUCED INFANT MORTALITY FROM 100% TO 10% BY PLACING-OUT BABIES IN FAMILY HOMES.



RUSSELL SAGE FOUNDATION.
DEPARTMENT OF CHILD-HELPING
105 East 22nd Street, New York.

Acting on this idea, the Speedwell Society was started at Morristown, N. J., in 1902, and I have ever since boarded out my atrophic infants there under the supervision of a doctor and trained nurse, who watch and treat the cases under the care of the various foster-mothers. The results have been better than with any other method of treating this class of cases. Thus, among 121 infants under 3 months, 45 died; 95, from 3 to 6 months, had 29 deaths; 83, from 6 to 12 months, had 21 deaths, and 85 infants, from 1 to 2 years, had only 8 deaths. These infants were all poorly nourished at the start, from bad hygienic surroundings, with various degrees of digestive disturbance from faulty feeding on the bottle, and stationary or losing weight. Although all had to be kept on bottle-feeding, a good proportion were not only saved but were restored to fair and even vigorous vitality. Under the old institutional methods nearly all would have died.

The Housing Question.

The mother is the only one who can save the baby. But what should the sanitary and municipal authorities do for the mother.

One great thing we can do for the mother is to find her a decent house, a clean street and a clean back yard. The mother is always fighting against dirt. Dust and dirt and flies—these are the things that the good housekeeper wages war against. Time was when the aristocracy and the middle classes lived in houses where now they would not keep their dogs. The ancient Scottish noblemen lived in houses in the High Street of Edinburgh where drains, scavenging, water, and other of the necessities and decencies of life truly were unknown. These were the days when death rates were enormous—when in 1761, 50 per cent. of the population of England died before the age of 20 years, and from 1751 to 1760 only 312 children out of 1,000 born survived to the age of ten years, while in Russia at the beginning of the 19th century only one-third of the children of the Russian peasantry lived to grow up. (Mangold).

Sanitary methods have brought down the general death rate in London to about 12 per 1,000, and the general infant death rate to about 109 per 1,000 babies born.

But the places where the big Infant Mortality occurs are parts of certain cities where there are houses which are like the houses in which the Edinburgh aristocracy lived in the 17th and 18th centuries. *And therefore Infant Mortality is great.* In the City of Toronto for example.

One Water-Tap to Ten Houses.

There you shall see ten mean houses in a row, with one water-tap out on the street, which is their one source of water supply. How can the mother keep things clean? There you shall see whole districts where that abomination, miscalled a sanitary convenience, recalls to one the unmentionable filth of the seventeenth century.

The Filthy House.

There you shall see back to back houses—houses unfit for human habitation—houses unfit for a dog-kennel—houses that Hercules himself, who cleansed the Augean stables, would refuse to take the contract to clean. And we expect the poor women bearing the burden of motherhood to do it! That house was probably old and filthy when she came to it. The lack of any convenience, sanitary or otherwise, no bath—no sink even sometimes, an unpaved street or lane outside,

and a good deal of dirt constantly coming into the house in various ways—the sum total of these things is too much, and it is harder on the mother than the father, because she is in the house nearly all the time and has but little recreation or amusement, while the tendency to deterioration of character and conduct in such a house is great.

No wonder that Dr. Hastings, Medical Health Officer of Toronto, is now getting information as to the housing problem in Toronto. But the City still sleeps on, though it shows some signs of waking soon. It cannot wake too soon, for there were born in Toronto in 1908, 7,618 children. And 1,215 children—or 159 in 1,000, died before they were one year old.

Still births are not included at all in the above figures, according to the International classification, now generally adopted.

Is Not a Man Better Than a Sheep.

As the Medical Officer of Northumberland says, referring to the Infant Mortality of Northumberland:—If such a mortality were to take place among lambs, a Royal Commission would be appointed and measures would be adopted for preventing such an unnatural mortality. Lambs, however, are frequently worth 50s. each when six months old; apparently babies are not.

Yet Dr. Farr, in 1876, estimated the mean net economic value of each male member of the population at £150, his estimate being based upon the low standard of the agricultural labourer of that period. He concluded that if this estimate were extended to the whole population, including females, the standard might be lowered to £110 a head. At the age of twenty-five years the net value of a man (i.e., the present value represented by the excess of his future earnings over cost of maintenance) was estimated by him at £246. Recently Professor Irving Fisher, of Yale University, has estimated the minimum worth of the average American life as 4,000 dollars at the age of twenty years.

Report by Dr. Newsholme to the Local Government Board.

By far the most important publication during the year on this subject has been that on Infant and Child Mortality, prepared by Dr. Newsholme, Chief Medical Officer to the Local Government Board, and presented to both Houses of Parliament by command of His Majesty. Dr. Newsholme's main theme is that the great loss and wastage of infant life suffered by us is due to circumstances which are within our control. It is our own fault—and it is our business to face it.

The Times in a leader on this Report aims fearlessly and straight at the mark when it speaks thus of

Dirt and Death and The Muzzled M. O. H.

"Nearly every county which has an excessive child mortality contains towns or districts which, within the last few years, have been visited by inspectors of the Local Government Board in consequence of epidemics or continuing prevalence of disease; and the reports of these inspectors tell the same tale of dirt and of neglect, with but little individual variation. From time to time we have given summaries of them; but they usually appear to run off the authorities concerned like water off a duck's back; and it is not uncommon for the evils described ten years ago to be again described as existing in equal intensity to-day. As a rule, it is found

Photo by Mr. Burnett, of Victoria College.

Where He Lives. An Unpaved Yard in Toronto. Three very dirty houses, with leaking roofs.

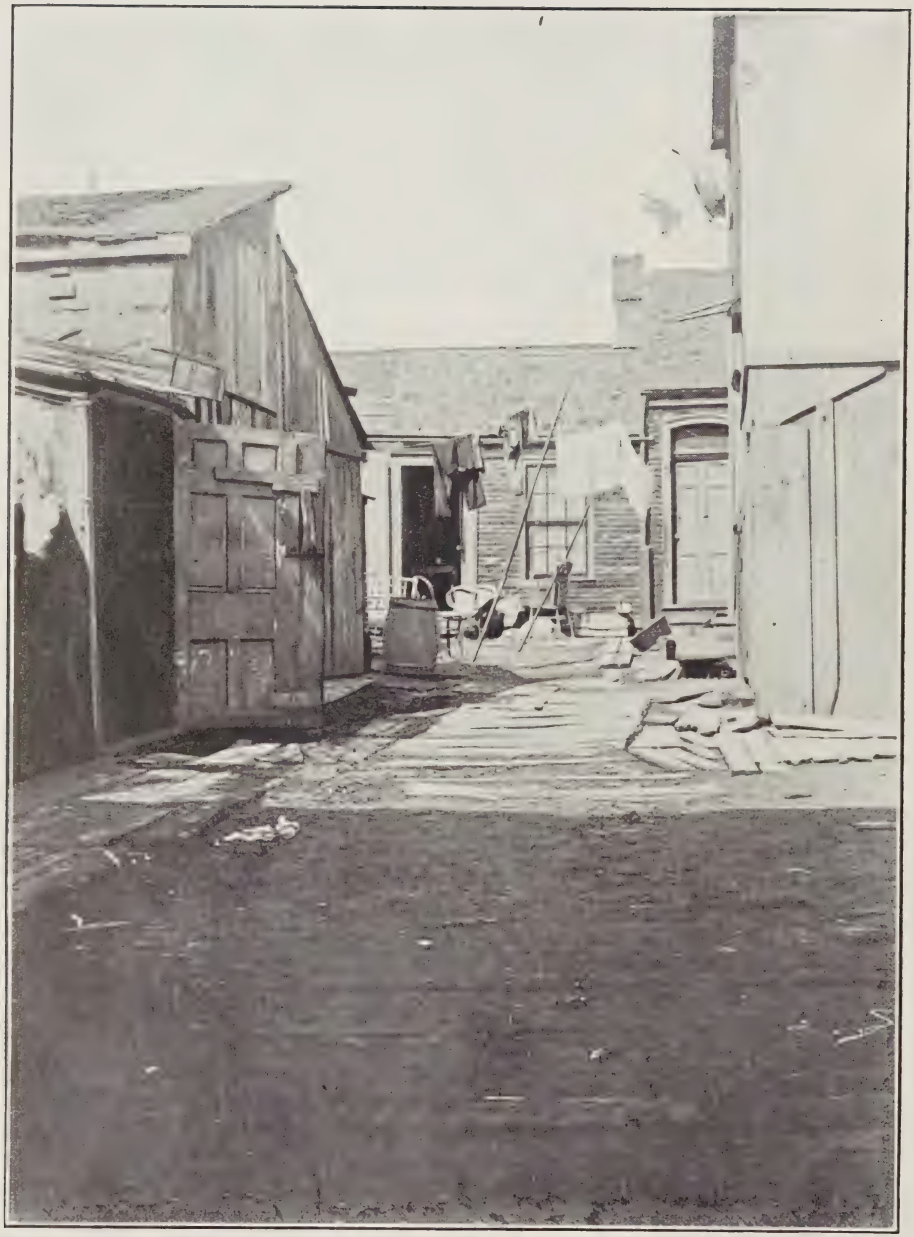
Rear view of a two-roomed dwelling over a store. This stair is the only means of access. —Burnett.

West end of Toronto. Row of ten houses, with one water tap at the end for the sole water supply. —Burnett.
Rent for these houses, $8.00 per month each. Total rent, $960.00 per year.

East end of Toronto. Sole "sanitary convenience" for at least four houses. —Burnett.

—Burnett.

Central part of Toronto. Archway through which access is had to the houses in the following picture.



—Burnett.

Parts of four houses in a group of six. Total number of inmates in the six houses, 50 persons. Open door of stable to left. Two "sanitary conveniences" for the whole six houses and 50 persons.

Narrow lane on which fronts a row of houses, right hand of photograph. —Burnett.

Two families (14 persons) live in cottage on left of photograph. —Burnett.

Muddy and dirty yard. Man and wife and seven children live in the south house. —Burnett.

One tap on the corner is the sole water supply for this row of houses, and for another row at right angles to it. —Burnett.
This tap is also the water supply for another house nearly quarter-mile away. East end of Toronto.

that the medical officer of health is a busy local practitioner, receiving a small salary which his employers regard chiefly as a sop to keep him quiet, or that he is naturally unwilling to incur the risk of offending his patients by calling attention to their misdoings. The members of the local council are often the owners of the cottage property which they ought to condemn, or are large contributors to the rates which would be temporarily increased by improvements. In many cases they have sought and obtained election to their offices simply as a means of saving the district from what they would describe as 'expense.'

"It seems manifest that the infliction of such loss upon the community generally, as a result of the ignorance, the parsimony, or the deliberate neglect of duty, of a few parochial office-holders should no longer be permitted by the legislature. It should not be difficult to enact that systematic neglect of their duties by urban or district councils should entail a transference of those duties, and of responsibility for their performance, to county councils or other selected bodies; and, now that the Chief Medical Officer of the Local Government Board has shown the intimate connection between infantile mortality and general sanitation, it is not too much to hope that the President of the Board may be able to convince his colleagues of the urgent necessity for Parliamentary action. The bitter cry of the perishing children should not be suffered to remain unheard; and Mr. Burns would certainly be supported by public opinion in an endeavor to improve the conditions which Dr. Newsholme has described."

In other words, it is we and our representatives who must save the lives of the children, by "efficient domestic and municipal sanitation and good housing." This gives the mother a chance to save the baby.

Infant Mortality in 1867.

In 1867 Ruskin wrote that one of the crowning and most accursed sins of the society of that day was the brutality with which it suffered the neglect of children.

In 1867 Infant Mortality varied from 150 to 250 per 1,000, but in 1909 it was reduced to 109 per 1,000. In this fact is the earnest of victory. What has been carried so far can be carried further.

Is It The Survival of The Fittest? No.

Dr. Newsholme enquires into three separate questions:

First, whether or not a high infant mortality is only a weeding out of the unfit, and the survival of the fittest.

This fallacy has been ended for ever by the painstaking and scientific investigations of Dr. Newsholme and his Department. The following table (taken from Dr. Newsholme's 39th Annual Report) shows it. Where the infant mortality is lowered; the death rate at all ages is lowered. Where the infant mortality goes up, up goes also the general death rate. Excessive mortality in infancy means excessive mortality in later life.

"The conclusion from this diagram is evident. As each sanitary authority and the inhabitants of its district succeed in removing the conditions favouring high infant mortality, they are removing the conditions producing a high rate of mortality in youth and throughout adult life."

	Mean Population, 1891-1900.	Mean Infant Mortality per 1,000 Births.
England and Wales.....	30,643,479	157
Selected Healthy Districts	4,477,485	109

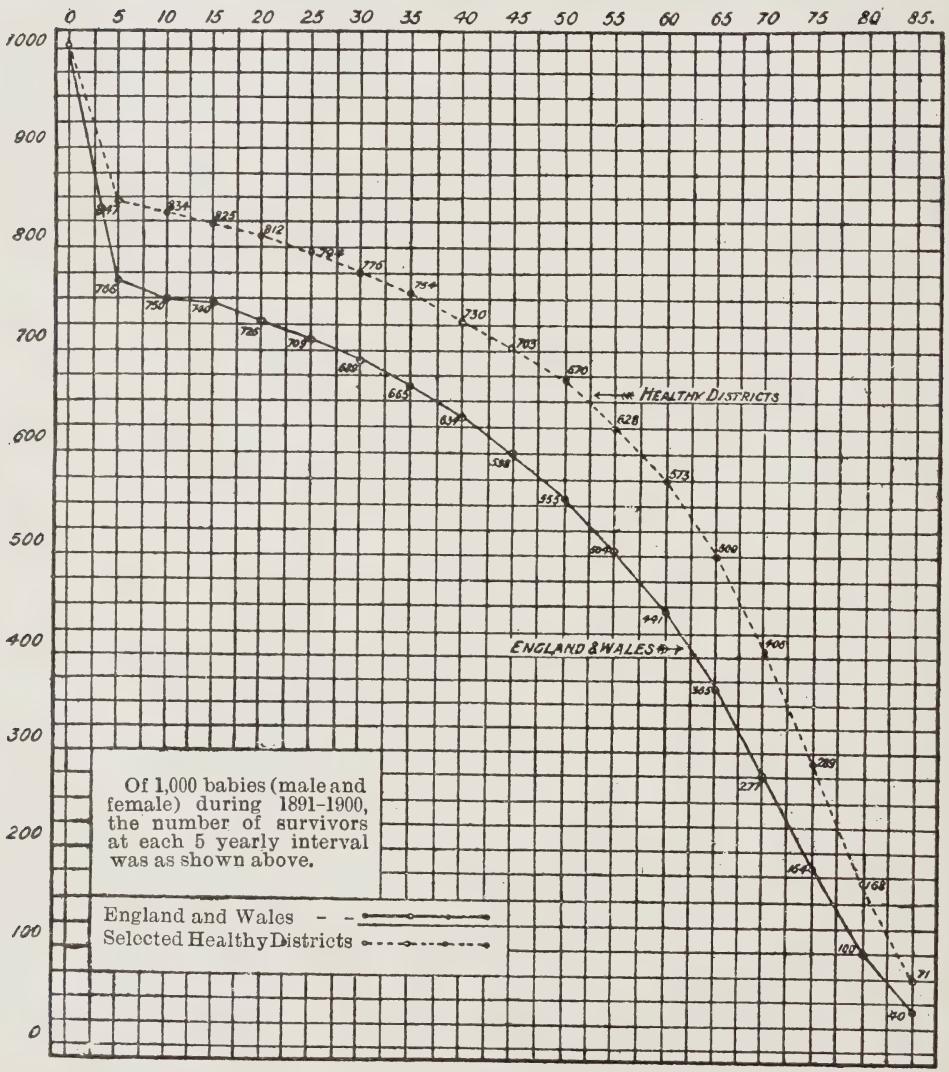


Fig. 1.

This table is to be read as shown in the following examples:—At age 20 the number of survivors was 812 in healthy districts, 726 in the country as a whole; at age 60 was 573 in healthy districts, 441 in the country as a whole; and so on.

Where Does the Baby Die?

Dr. Newsholme attacks secondly the question as to *where* the babies die, and proves by overwhelming statistical evidence that they die in the crowded centres of population. So many people to the acre—so many babies die. But this condition may be overcome, *if the sanitation is good.* In the whole of London that rate in 1908 was 113 per 1,000 births, but in the least overcrowded districts it was only 91 per 1,000, while in the most overcrowded it was 132 per 1,000. Taking individual boroughs, the lowest rate was in Hampstead (69), and the highest in Bermondsey (144). Sir Shirley Murphy very truly says: "The difference between the rates of infantile mortality in districts well and badly circumstanced socially is sufficient indication of the results which might be obtained if the infants of the less-favoured districts had extended to them the same care as that bestowed upon infants of the better favoured districts."

What is the Great Cause?

The third question is: What is the greatest cause of infant mortality? In short, What kills the baby? Dr. Newsholme's answer is in these words: "Infant mortality, is highest where, under urban conditions of life, filthy privies are permitted, where scavenging is neglected, and where the streets and yards are to a large extent not "made up" or paved.

The local sanitary authorities are largely responsible for the continuance of excessive infant mortality, and until they fulfil satisfactorily their elementary tasks, efforts in the direction of domestic hygiene can only be partially successful. Diarrhoea is most prevalent where municipal sanitation is bad. It cannot be entirely removed unless infants' food is prepared under cleanly conditions. Sanitary authorities, in the words of Sir John Simon, the first Medical Officer of the Local Government Board, are the "appointed guardians of masses of human beings whose lives are at stake in the business."

How to Reduce Infant Mortality.

Finally, Dr. Newsholme states clearly how to reduce Infant Mortality. In addition to what has been already stated he recommends:

(1). More detailed investigation of all deaths occurring in infancy as a guide to administrative action.

(2). Inquiries into the circumstances attending still births.

(3). The adequate training of midwives.

(4). The efficient administration of the Midwives Act.

(5). The adoption of the notification of Births Act.

(6). And the making of arrangements for the giving of instruction in infant hygiene.

He reserves for a further report detailed reference to the admirable work done in Municipal Milk Depots, Schools for Mothers, Infant Consultations, etc., and concludes by giving a "Black List" of eight counties where the sanitary authorities "are most urgently called upon to perform more completely their primary duties." And then says:

Expensive, but Economical.

"The measures indicated above furnish an incomplete remedy in the counties in which insanitary conditions are rife. Sanitary authorities in compactly populated districts should decide to remove all dry closets if a water-carriage system is practicable, to introduce and maintain efficient scavenging, and to provide for the satisfactory paving of streets and yards when required. Doubtless these measures will be expensive; but they are much more economical than the sickness and impaired efficiency of the population which are their alternative; and no sanitary authority can justify neglect in undertaking these elementary tasks."

Mother-Craft.

In connection with the recommendation of Dr. Newsholme, that arrangements should be made for the teaching of infant hygiene, it is highly satisfactory to note that another Department of the British Government, the Board of Education, has made a departure in this direction. Dr. Janet M. Campbell, one of the assistants of Sir George Newman, the Chief Medical Officer of the Board, has prepared an admirable monograph on "The Teaching of Infant Care and Management in Public Elementary Schools." Dr. Campbell had already "made good" on the staff of the London County Council Education Committee, under Dr. James Kerr, and this Memorandum will add to her reputation. As *The Medical Officer* aptly remarks, the bitter jest of Mr. Herbert Spencer will now lose its reproachful sting, if his fabulous antiquary should come across Dr. Campbell's monograph:—

A School for Celibates.

"More than half a century ago Mr. Herbert Spencer said, that if by some strange chance not a vestige of us descended to the remote future, save a pile of our school books or some college examination papers, we might imagine how puzzled an antiquary of the period would be on finding in them no indication that the learners were ever likely to be parents. 'This must have been the curiculum for their celibates,' he would say. 'I perceive here an elaborate preparation for many things, but I find no reference to the bringing up of children. They could not have been so absurd as to omit all training for this gravest of responsibilities. Evidently, then, this was the school course of one of their monastic orders.' It is desirable that before girls actually leave the elementary schools they should have an opportunity of learning the right way of conducting the household which one day they may hope to control.

"In a prefatory note to the Memorandum, *Sir Robert Morant states that the Board of Education is anxious to direct the attention of members of local education authorities, of managers, and of teachers of public elementary schools throughout England and Wales, to the great importance of increasing and improving the present inadequate provision in our schools for instructing girls in the care and management of infants. He further very properly insists that the suggested training should be of a two-fold nature, namely, a training in domesticity and a training in infant care, and that it should be designed not to replace, but to stimulate and encourage teaching by the mother in the home.

*Board of Education Memorandum on the Teaching of Infant Care and Management in Public Elementary Schools, 1910. Circular 758. Price 2d. (London: Eyre & Spottiswoode, Ltd.)

"Dr. Campbell, points out at the outset that the care and right management of infancy lies at the foundation of two somewhat kindred problems: the problem of infant mortality and its prevention and the still wider question of the physical health of the child. After giving a short account of what is already being done in some parts of the country as regards the necessary instruction, the main lines which should be followed in carrying out such a course are indicated. The girls should be placed in two groups, one being of those between 7 and 12 years and the other of those between 12 and 14 years. The lessons, which should be practical in their application, should also be of the simplest character. They should be directed towards developing and forming the 'health conscience' of the children and towards arousing the desire and ambition to put the principles embodied in the lessons into practice in their own homes.

"The subjects suggested for the younger group of girls include personal hygiene, fresh air and ventilation, warmth, cleanliness, eating and drinking, clothing and sleep. For the elder girls the teaching should be, in the main, a direct continuation of that already given, extending the character and degree of the illustrations, and leading the girl gradually on to more advanced matters, particularly concerning infant management. They should also receive lessons in housekeeping, in home nursing, and on temperance. Dr. Campbell considers that as a rule the teaching is better entrusted to a member of the regular school staff rather than to a special visiting teacher. The former has the advantage of knowing the girls well and of meeting them constantly, while in many cases she may know the parents and the home circumstances and may be able to exert a considerable influence on the mothers."

THE AMERICAN ASSOCIATION FOR THE STUDY AND PREVENTION OF INFANT MORTALITY.

The Association held its first Annual Meeting at the Johns Hopkins University, on November 9th, 10th and 11th. The Exhibition, for example, touched almost every aspect of the subject. In one corner were seen model baby clothes (from Montreal). In another, there was a model milk exhibit. In a third, a room of a house in the slums of New York, before and after the advent of the visiting nurse. Charts from Washington, diagrams relating to the deaths of infants, a red electric flash-light coming out every six seconds to show how often a baby dies in the civilized world, and a large photograph, surrounded by electric lights, showing a mother nursing her baby with the question under it—"This baby is getting a square deal, is yours?"—went to make up the grand total of a remarkable exhibition.

What Becomes of 100 Babies Born in Baltimore.

Another clever device for making people think, was an exhibit in three sections representing the 1st, 2nd, and 3rd years of life.

In the 1st section were 100 tiny naked celluloid dolls, in the 2nd, 87 dolls and 13 tiny graves. (If it had been Toronto, there would have been 16 graves). The graves were marked—Diarrhoea, Diphtheria, "Bottlefeeding," "Tuberculosis." The 3rd section showed 82 dolls and 5 graves.

Seventeen organizations and a magnificent working committee made the exhibition.

Some of the Addresses—Registration.

The infant population of the United States is now given at 1,500,000. The number of babies who die every year is 300,000—equal to the population of a large city. The total number of deaths from tuberculosis per annum is 160,000—equal to the population of a small city. But our American friends with their wonted energy and progressiveness are now waking everybody up over this question. On the question of registration, an important Report by the chief American Expert on Vital Statistics was presented, and certainly was characterized by plain speaking:

"Talk about the registration of births in the United States! Why, for not more than one-half (55.3 per cent.) of the total population of the United States is there even fairly accurate registration of deaths alone. Many States—practically the entire south—make no more records of the deaths of their citizens than if they were cattle; not even so much, for blooded cattle have their vital events recorded, while human beings are thrown into their graves without a trace of legal registration. And even the States that have fairly good registration of deaths, and that have had such registration for many years, grossly neglect the equally important, or even more important, registration of births. * * * Our native born children of native parents are as worthy of protection as the children of any other country, and the children born to foreign parents in this country should have the same safeguards about their cradles as if they had been born in a foreign land. America should not mean barbarity in its relation to infant life. The aegis of protective civilization should rest upon the infant of American birth, and a proper record be made of the vital events of his life for his personal protection, legal use and for the most important sanitary information which can alone be obtained from such records." From Dr. Cressy L. Wilbur, in Report of the Committee on Birth Registration.

Ask for the Birth Certificate.

One good way to secure birth registration would be to insist on a child going to school for the first time, or going to work anywhere, showing his or her birth registration certificate. Another good plan was used by Dr. Lederle, Health Commissioner of New York, who introduced a simple device for forcing doctors to record births. Whenever a child's death certificate was filed, the birth records were searched for its birth certificate. If the child's birth had not been received, the family was questioned as to the doctor or midwife, and a warning sent to the offender that the next failure to record a birth would be followed by publicity and prosecution. Immediately the (apparent) birth-rate rose—not because more children were born, but because a simple workable device was installed for compelling registration.

The Duty of the Municipality.

Dr. Neff, of Philadelphia, described the Duty of the Municipality in Preventing Infant Mortality, and gave an account of what was done in Philadelphia in the summer of 1910, when, though the general infant mortality for Philadelphia showed an increase of 44.4 per cent. over the rate in the summer of 1909, yet the district covered by the nurses showed an increase of only 4.4 per cent.

Organizations.

"In the movement, which it is hoped will lead to a permanent Division of Child Hygiene, there were enlisted 20 day nurseries, 22 settlements and neighborhood betterment agencies, having facilities such as baths, camps, mothers' clubs,

milk stations, etc., eight agencies providing temporary shelter for mothers and children, 10 modified milk stations, 55 hospitals and dispensaries, 30 associations providing convalescent care or outings, 21 agencies visiting and enquiring into the needs of mothers and children in their homes, and the city, through its Bureau of Police and Property, Board of Public Education, and the Department of Public Health and Charities, represented by the Divisions of Medical Inspection, Nuisance Inspection, House Drainage Inspection, Milk Inspection, Meat and Cattle Inspection, Tenement House Inspection, School Nurses, Visiting Nurses, Children's Agent in Charge of Dependent Children, and Special Agents for Advice and Information.

Other Helps.

Education of the mother was continued in the home by personal instructions and demonstrations by the nurses; milk stations were made educational centres; medical clinics were established. Exhibits on the "Care of the Baby" were most effective features. They were placed in milk stations, schools, city piers, and other institutions, and consisted of graphic charts and display cards, photographs, sketches, and models, which depicted the proper hygiene and care of the infant. Classes of mothers were held once a week in several sections of the city and prizes were given for those babies showing the best results. Two large city piers were altered and furnished by the city as open-air hospitals, with modified milk stations, physicians and municipal nurses in attendance, and accommodations for mothers and older children. On the piers lectures were given to the caretakers in the preparation of food, washing, and care of the baby."

Audiences at the Meetings.

The audiences were large and enthusiastic, and the general effect of the meeting will probably be far-reaching. The leading professors of the Medical Faculty of Johns Hopkins University were present and contributed greatly to the success of the meeting, especially the President, Dr. J. H. Mason Knox, Dr. William H. Welch, and Dr. Llewellys Barker. His Eminence Cardinal Gibbons and His Excellency Monsieur Jusserand, the French Ambassador, were present, and there was a large attendance, not only from Baltimore, but from New York, Boston, Chicago, and most of the other large American cities. Southern hospitality and the interest of a common purpose, added greatly to the pleasure and profit of the guests.

INFANT MORTALITY IN OTHER COUNTRIES.

China.

For purposes of comparison it may be mentioned that in Hong Kong, where there is birth registration, the infant mortality rate in 1909 was 873 per 1,000 among the Chinese. (British Medical Journal, October 29th, 1910, p. 1,316.)

Germany.

Figures lately published by the Imperial Statistical Office show that the rate of infantile mortality throughout Germany increased slightly last year both in town and country, but the rate in the towns was once more lower than that in the country. The figures for children born in wedlock were:

Deaths under one year per 1,000 born alive.

	1907.	1908.
Town	154	157
Country	162	166

Children born out of wedlock.

	1907.	1908.
Town	281	291
Country	295	307

The averages (children born in wedlock) for the years 1886 to 1890 were: Town, 210; country, 187; for the years 1896 to 1900, 195 and 185; 1901 to 1906, 181 and 178. For the first time in 1907 the percentage of mortality in the towns was less than that in the country. The official note referring to these figures expresses the belief that the greater decrease in mortality in the towns is due to the greater proportionate decrease in human fertility. It is believed that in proportion as the number of children per family in the towns tends to become less, so the value attached to infant life grows greater, and people are more careful of the health of young children.

SPECIAL ENQUIRIES—ABERDEEN.

Among the special enquiries made during the year into infant mortality, one which stands out prominently is that of Dr. Matthew Hay, of Aberdeen. The enquiry covers many points already touched upon, but it concludes with the following practical suggestion worth noting by those who work where infant mortality is at its worst, namely, in the poor districts:

Cheap at Seven Pounds.

"Would it be too much for the Council—if even for only one year—by way of experiment, to vote a sum of, say, £150, to be placed at the disposal of their health visitors for presenting to mothers among the working classes, who are, *for satisfactory reasons,* obliged to bottle-feed in place of breast-feed their babies, a supply of tubeless bottles and a suitable household milk sterilizer? The number of bottle-fed babies of all classes last year was 1,334. Even if so many as 1,000 mothers accepted the proposed gift, the cost would be covered by the suggested grant.

If only twenty lives could be saved, they would be exceedingly cheap at £7 to £8 each. But the saving might be much larger."

Ireland.

A Conference on Infant Mortality was held in September in Dublin under the auspices of the Women's National Health Association of Ireland. Lady Aberdeen presided, and said that though the infantile death rate in Ireland was considerably lower than in England or Scotland, yet in the towns the death rate was high. In England the average infantile death rate was 126 per 1,000, in Scotland 116, and in Ireland 92, but it was considerably higher in the larger cities, being 141 per 1,000 in the first year of life in Dublin, in Belfast 139, and in Cork 126.

Children Without a Name.

The corporate conscience is always below the standard of the personal conscience, and in a Christian community, such as ours, the child born under the overwhelming misfortune that its birth is the proof of its parents' sin has even less chance of life than the slum baby.

The Nameless Baby Dies.

Taking the average for England and Wales, the death rate among illegitimate children is twice that of children born in wedlock, as Dr. Newsholme says:

In 1909 the special death rate among illegitimate children in the City of Norwich was 205 per 1,000 births, whereas the special death rate among the legitimates was only 108. In other words, the chances of surviving one year, for the illegitimate infants, are only about half as good as those of their legitimate compeers. Commenting on these figures, Dr. H. C. Pattin, M. O. H., writes: "There is unquestionably a deplorable, and one cannot help thinking a largely preventable, leakage of life here; a leakage that would be even more pronounced were it not for the efforts made by the health visitors and by some voluntary workers who make the oversight and care of illegitimate infants their special form of social service. Against what adverse influences they have to contend the figures sufficiently attest.

It is significant that under three months of age the prospect of death is 108 per cent. greater, at ages three to six months is 72 per cent. greater among illegitimate than among legitimate infants.

Is it Christian?

Is the attitude of society to the illegitimate child a right one? Is it a Christian attitude?

Is it Successful?

One thing is certain. This attitude has not been a successful attitude. It has not helped us any. It has not ended the evil. The evil is a present one. And it kills the baby. The general infant mortality rate is bad. But the infant mortality rate among those whom society brands as "nobody's children" is worse—twice as bad as the former.

In Ontario the number of illegitimate births in 1908 was 819, but there is no separate record of the number of deaths under one year of age. Special attention given to the number of deaths, causes of death, and other particulars would help to reduce our abnormal and disgraceful infant mortality.

The Baby Farmer.

The baby farmer is not by any means unknown in Ontario. There were certain of them so well known to the police that legislation at last reached some of them. But the terrible plan of giving $50 to a woman or an institution, on condition that the giver is to be relieved of all responsibility for some innocent baby is a wicked thing. The woman who is willing to take another woman's baby that has no claim upon her, except the claim which every helpless child has upon each one of us who were all once babies ourselves, is either a great philanthropist, willing to burden herself with the incessant care, charge, labour, loss of comfort, and anxiety

that an infant involves, as well as the cost of its maintenance up to the age of fourteen years; or else she is in desperate need of the $50. And the $50 will be gone and the remaining responsibility irksome long before the poor child stands on its feet for the first time. Advising the young mother, the only hope most nameless babies have, to disown her child, and harden her heart against it, is not going to help the mother, the child, the Church, or the nation.

Is There no Better Way?

The common attitude of society on this question has a suspicious resemblance to the attitude of the Pharisees in the time of our Lord. It was not approved of by Him. One great argument of such persons is that if we do anything for the babies, it will make it easier for people to sin this particular sin, and so be bad for society. Is that right?

The Empress Catherine II. of Russia seems to have been the one who first refused to hold these poor children responsible for the sins of their parents, and built foundling hospitals for them. Paul Neander of Moscow says that she ordered that there should always be a basket with warm wraps, ready day and night, to receive foundlings, and that the guards should not show themselves and never ask the least question of those who placed the babies in the basket, which was drawn inside through an opening in the door.

The Friendless Immigrant Girl.

Any one who works in hospital maternity wards cannot fail to observe what a number of immigrant girls, in large cities at least, find their sad way there. They are exposed to peculiar temptations. Few realize what a protection to a girl is the mere knowledge on the part of those likely to tempt her, of the fact that she has a home or that her mother is living, or even that she has a brother in Canada. It is the lonely girl that is in the most danger. And the men whom they meet laugh at their Old Country ideas, pretending (we hope untruly) that things are different here and all women are—etc., etc., etc. Prevention is better than cure. Safeguard the friendless immigrant girl. Hostels and respectable homes or Government homes for immigrant girls are much needed, and prevent a great deal of harm and trouble.

Hospital Social Service Departments.

Social Service Departments in Hospitals deal with this dark problem. The Social Service Department is formed primarily of one or more doctors and nurses, with or without volunteer "Social Workers," who make it their business to get hold of the cause and root of the sickness, whether that be drinking, recklessness, starvation, overeating, heartache, or, as in the Maternity Department sometimes, some form or manifestation of the so-called "social evil."

This movement began under Dr. Cabot in the Massachusetts General Hospital, Boston, and there one of the nurses, Mrs. Jessie D. Hodder, has special charge of

The Girls Who Go Wrong.

The following passage, taken from an address given by her at Clark University, gives some idea of the principles which are sought to be carried out in Social Service of this kind:

"Every situation of this kind is a difficult one to solve because we lose our calm. I do not agree with you that the girl cannot keep her baby. Think of the widows you know who are bringing up their children, who have no education, nothing but their hands to earn with, and untrained hands, at that. Having a baby is not like having a boil or a pimple. A poultice or time would dispose of either of the latter and leave the patient as she was. Disposing of a baby does not leave either its mother or father where they were before—and what of the baby? Go look at the wards of the State; see those at the Reform Schools, the women in the prisons, the boys in the Reform Schools and prisons, and see how many of them do not know who their parents were; they are children who have not asked to come into this world, and many of them have been shuffled off by selfish parents.

"This mother can take care of her baby, I feel perfectly sure; and she will be a bigger, braver woman if she does, as you realize. I can imagine no more horrible fate than to feel that my baby—my own flesh and blood—was somewhere around in the world, I knew not where. Take this girl's life so far, add this experience (I mean the sex experience), then add the experience of carrying and giving birth to her baby plus the care she will have had of it so far, then subtract the baby—put it selfishly, brutally, out of her life—and what is there left? You see, we stop being twenty, and we come to be forty, and we care a lot if our feelings are worth having. Life ceases to mean existence and comes to mean soul and all that goes to make it richer, more worth while. You and I, and every one who is helping the girl in this sorrow, must not lose sight of this and the years to come. Can there be anything more awful than to wake up and realize that one has thrown away an opportunity? Surely that is what would happen if that baby is given away. I have seen too many girls find in their baby all they have hungered for to be willing to fall in with the plans of a woman who, through fear and shame, shrank from her baby and the disgrace it would bring upon her.

"How about the chance to develop the man morally? What bigger debt has he contracted in this world than his debt to his own child? Why cannot he deny himself and spend $10 a month towards its support? Why cannot he take out a savings bank insurance policy for $1,000 for the child, payable at its twentieth birthday? Its mother might take out one for $500. In the meantime both contribute towards its support and schooling. You or some one equally interested might be appointed guardian for the child and see that when it grew up it learned a trade or went to college; its father did, you say. Say that to him. Make him feel that his baby, illegitimately born, is just as human a being, just as sensitive, just as ambitious, as a baby born in wedlock, or as he was when he struggled and worked his way through college.

"I cannot feel that the community has any growth so long as its members are shirkers. This I am not saying to you; I am saying it to all of us who turn and run from an illegitimate baby or any other evidence of our own self-indulgence or wrong-doing.

"If we do not hold the man up to the mark in these cases he is justified in feeling not only that it is not immoral for him to do such things (he sees how society treats the girl), but that, by some perversion or twist of the social order which does not apply to women, he has no obligation to his offspring. What is he on earth for then? To whom *does* he owe his obligations? To society? His child is society. To his neighbor? His child is his nearest neighbor. His child is both, and closer than both, and we must make him feel this until he aches. The girl must help us. Of course, she must not marry him if they do not love each other; but unless he shares the care of the child he will see no reason why he should not

seduce any or every girl his brutal selfishness leads him toward. Surely, thereby, his sense of citizenship, fatherhood, and the rest are weakened. For the sake of his moral welfare, for the sake of his child, for the sake of the next girl he may know, for the sake of the community in which he lives, and upon which they would throw the care of this child, he must be made to share the responsibility of the child's support and care."

WHAT NEW SOUTH WALES DOES FOR STATE CHILDREN.

This Department is indebted to Sir George Reid, High Commissioner for Australia, who, by request, procured for us the following information. The letter is from the Hon. Charles K. MacKellar, the President of the State Children's Relief Board, and it shows that New South Wales does not "turn and run" from this problem. State children is a better name than "Nobody's Children":

CHARITABLE INSTITUTIONS OF NEW SOUTH WALES.

OFFICES OF THE STATE CHILDREN RELIEF BOARD AND CHILDREN'S PROTECTION ACT, AND INFANT PROTECTION ACT.

RICHMOND TERRACE, DOMAIN,
SYDNEY, June 20th, 1910.

THE RIGHT HON. SIR G. H. REID, P.C., K.C., K.C.M.G.,
High Commissioner for Australia,
Commonwealth Offices,
72 Victoria Street, Westminster, S.W.

MY DEAR SIR GEORGE,—I duly received your enquiry, dated the 3rd May, as to what is done by the New South Wales Government in connection with the establishment of a home for the care of mothers of illegitimate children, and hasten to acquaint you with the steps that have been taken in that regard up to the present.

There are now three homes for the care of mothers and infants, and these vary slightly in nature, though established for a similar purpose. There is, first, a Home for Sick Infants, at Paddington, controlled by a private nurse with a staff of trained assistants, under regular medical supervision. This Home accommodates some twenty sickly infants, with five or six of their mothers, who, as far as possible, are expected to nurse the children themselves. The majority of the children admitted are of the type of sickly infants who have been placed out by their mothers in foster homes, and whose custodians have been unable or unwilling to nurse them properly, with the result that the little ones have fallen into ill-health. The mortality in this Home is naturally large, as the infants are taken in only when the custodian or mother has neglected to care for them properly—a neglect which frequently proves fatal, and which was expressed by a mortality rate of 90 per cent. when this same class of children were removed in an ailing condition from low-class foster homes for medical treatment in large institutions (that being the general practice prior to the opening of special homes for the purpose). Up to the present time, the mortality rate in this particular home has been 40 to 45 per cent. The infants admitted thereto are paid for by the State Children Relief Board at 10s. per week each.

Secondly, there is a Home for *Healthy* Infants with their mothers at Thirlmere. This Home accommodates some twenty infants and ten mothers. The class of children sent there are (*a*) healthy infants, and (*b*) those in a convalescent state from the former Home. This Home has a mortality rate of, approximately, 6 to 7 per cent; a trained nurse is in charge of the children, who have regular medical supervision. These, also, are paid for by the State Children Relief Board at 10s. per week each.

Both of these Homes were inaugurated by the State Children Relief Board, in pursuance of the general State policy of boarding-out. The nurses in charge are private guardians, and not Government officers, but the Homes are under the direct supervision of the Board just mentioned.

Thirdly, there is a Home for Infants, at Croydon, with accommodation for some fifteen babies with their mothers. This is the only institution, wholly supported by the Government, for the purpose of dealing with infants and their mothers. This Home is in charge of a Government matron and an assistant. It has only been in existence six months, and no deaths have occurred there.

The main object in connection with these Homes is to provide strict privacy for the inmates, apart from the contaminating influences which are inseparable from large institutions, and to which, in the absence of these special homes, the girls would be subject. So far as young children are concerned, too, the dangers of infectivity are reduced to a minimum when the children are treated individually in suitable establishments.

INFANT MORTALITY IN NEW SOUTH WALES.

So much for New South Wales and the Nameless Baby. But the general question of Infant Mortality is also carefully considered there. The Hon. Mr. MacKellar continues:

I am at present in communication with the Hon. C. G. Wade, Premier of the State, concerning the necessity for providing additional accommodation for sick infants in specially adapted premises, such as wooden pavilions or tents. Dr. Clubbe, President of the Royal Alexandra Hospital for Children, Camperdown, Sydney, is highly sympathetic with the proposal. It is likely that the Government will give effect to some such scheme in the near future, of which I shall have much pleasure in forwarding you particulars. The primary importance of Dr. Clubbe's proposal is that it makes a definite and systematic effort to provide more adequate treatment for infants suffering with gastro-enteritis, and other diseases of similar grave infectivity. When these premises are available, they will largely supersede the Homes for Sickly Infants.

Dr. Clubbe anticipates a decrease in the mortality rate of infants suffering from gastro-enteritis and similar infectious diseases, of at least 30 per cent. if his suggestion is adopted of treating the children in suitable tents or pavilions.

This is the detailed information of the nature you seek. I shall now furnish you with a few other particulars, which will probably be convenient for you to have.

Reference to the Government Statistician's pamphlet, entituled "Tuberculosis in New South Wales" (by Mr. John B. Trivett, F.R.A.S., F.S.S.), shows the extreme importance of the Dairy Supervision Act of 1886, which you will remember I had the honor to introduce into Parliament, as a factor in securing "a wholesome reduction in infantile mortality (tubercular diseases)." I shall

not overwhelm you with a mass of statistics, but shall quote the figures from that publication, showing that the deaths of children up to 4 years of age fell from 195 in 1886 to 44 in 1908, and between those years a gradual decrease was apparent. This, of course, only applies to children suffering from tubercular diseases. This is an obvious proof of the importance of having a pure milk supply for young infants.

The death rate in New South Wales (infantile) was 75.20 per thousand in 1908, as compared with 86.05 per thousand in Victoria during the same year. I attach a statement, showing the latest information as to birth rate, and the improvement manifested therein.

Appended is a record of the special action taken by the Medical Officer of Health for the Metropolitan Combined Sanitary Districts, Sydney. This practice is still in force. The methods adopted appear to be very similar to those followed at Huddersfield, mention of which was made in the Sydney *Daily Telegraph* of Tuesday, 7th June, instant. A summary of the procedure is forwarded herewith.

Additional measures to safeguard infant life in this State are: (1) The appointment of Lady Inspectors in connection with this Department, of whom there are three, to visit and inspect young infants up to the age of three years, placed out apart from their mothers. These Inspectors are Government officers. (2) Appointment of Lady Inspector, Department of Health, to visit and inspect infants, and impart instruction to nursing mothers, within the municipality of the city of Sydney. (3) *The compulsory attendance at Metropolitan Hospitals fortnightly of all foster-mothers with infants up to twelve months old, in order that the infants may be medically examined, and the foster-mothers instructed by the doctors,* who act in an honorary capacity. Children placed out within a radius of three miles of the city are taken to the established Children's Hospitals. Children in the North Sydney area are attended by a local practitioner, and the children at Goulburn are dealt with in a similar way. This system is being gradually extended, and will eventually include the whole State. The results achieved in this way are very valuable, enabling serious complaints to be checked at the outset, hereditary taints counteracted as far as possible, and foster-mothers, hitherto incompetent, made conversant with the main principles of hygiene, infantile feeding, and home nursing.

Any further information that you may require I shall be glad to let you have on application.

With kind regards, and the hope that I may hear from you at your leisure,

I am,

My dear Sir George,

Yours faithfully,

CHARLES K. MACKELLAR,

President State Children Relief Board.

OFFICE OF THE MEDICAL OFFICER OF HEALTH FOR THE METROPOLITAN COMBINED SANITARY DISTRICTS,

SYDNEY, 4th November, 1908.

SIR,—Early in the year 1904, I laid before the Local Authority for the City of Sydney a scheme which, it was hoped, would tend to the reduction of mortality from infantile diarrhœa in particular, and infantile mortality in general, through

the better instruction of nursing mothers. The principal feature of the scheme consisted in the employment of a trained woman inspector to visit the mothers of all children born in poor and thickly-populated neighborhoods in the city, and instruct mothers in the care and feeding of infants, and the proper treatment of children's food.

The scheme was adopted, and came into full operation in the middle of the year 1904. It has continued to operate ever since.

Full lists of all births registered within the city are obtained daily from the Registrars of births, together with the addresses of the premises on which births have occurred. As soon as possible after receipt of this information every house in a poor or thickly-populated district in which a birth has been registered is visited by the female inspector, and the nursing mother is interviewed and instructed verbally in the feeding and management of her child. Printed leaflets, giving simple instructions on the same subject, are handed to each mother visited.

The principal instructions impressed on the mothers in these visits are the importance of breast-feeding alone until the children have attained the age of about seven months, the superiority of cow's milk over any other artificial food, and the importance of the clean storage of infant's food, and its protection from flies and dirt.

A daily record of the names and addresses of all nursing mothers visited is kept, together with a record of certain other particulars obtained by the Inspector. Between the 1st July, 1904, and 31st December, 1907, 4,748 nursing mothers in the city were thus visited, or 53% of all births registered, or 67% of all births not in public institutions.

The average age of the children visited was as follows:

1904	5.3	weeks.
1905	5.4	„
1906	5.2	„
1907	5.3	„

The results of these operations have been very satisfactory, as will appear from the attached tables. The proportion of children entirely breast-fed began to increase immediately. In 1904, 72.2 per cent. of the children visited were found to be entirely breast-fed. In 1905, this proportion increased to 76.5 per cent. In 1906, it further increased to 78.8 per cent., and in 1907 it still further increased to 80.1 per cent. of all the children visited. No selection has been practised, except that the children visited have all resided in the poorer parts of the city. I attribute the above increase in the number of breast-fed children in the city of Sydney entirely to the operation of the means I have described. I do not know of any other influence which could have operated in this direction. Table 2 shows that a marked fall in the diarrhœal death-rate of the city of Sydney has taken place, and was coincident with the introduction of the system of visiting nursing mothers. The diarrhœal death-rate does not depend only on infantile deaths, since it is contributed to by deaths at all ages, but from 70% to 75% of all diarrhœal deaths are among children under one year of age.

Under the circumstances set forth, it appears to me that a strong *prima facie* case has been made out for extending the system of visiting nursing mothers to the suburbs of Sydney, or, at least, to the more populous and poorer class suburbs immediately surrounding the city. The Municipalities of Glebe, Newtown, Redfern, Darlington, Camperdown, Alexandria and Waterloo have a combined popula-

tion of about 100,000 persons, and are populated in the main by a class of persons who would benefit by the establishment of a system of imparting instruction in the care and feeding of children to nursing mothers. One woman could deal with these districts on the lines indicated.

I have the honour to request that you will consider the advisability of providing for the instruction of nursing mothers in those districts by increasing my inspecting staff by the addition thereto of a trained woman inspector or health visitor, whose services will be devoted to the visiting and instruction of nursing mothers.

I have, etc.,

(Sgd.) W. G. Armstrong,

Medical Officer of Health, Metropolitan Combined Districts.

TABLE 1.

Records of Nursing Mothers visited in the City of Sydney.

	1904	1905	1906	1907
Number visited	781	1,455	1,240	1,272
Breast feeding only	564 (72.2%)	1,114 (76.5%)	977 (78.8%)	1,019 (80.1%)
Partially breast-feeding	166 (21.3%)	250 (17.2%)	210 (17%)	202 (15.9%)
Not breast feeding	51 (6.5%)	91 (6.3%)	53 (4.2%)	51 (4%)

TABLE 2.

Death Rates at all ages from Diarrhoeal Diseases in the City of Sydney—per 1,000 living.

Year.	Death Rate.
1901	1.55
1902	1.86
1903	1.83
1904	.96
1905	.64
1906	.73
1907	.81

Australia *vs.* Canada.

Advance, Australia! An Infant Mortality of 75 per thousand is good. It is a splendid achievement. But why is it 125 per thousand in Ontario? They are working at it in New South Wales. We are not working at it in Ontario. We must get busy.

South Australia.

The other Australian States have the same general policy. In South Australia they do not use the word "orphan" in connection with the charitable institutions. There are no "orphan asylums." Children are looked after by a "Children's Council," which had in 1909-10 1,479 children under its care, 1,220 of whom were boarded out, seven in hospitals and thirty-two in institutions for defectives and delinquents. The total budget was about $100,000, of which fifteen per cent. was for central administration. The expenses for the children boarded out, including administrative expense, was twelve pounds a year, or about five dollars a month, each. Some of these children, working part time after they are

thirteen, earned and deposited in the Postal Savings Bank a total of $6,500. Applications for children, which are always greater in number than the children to be placed out, totalled 364. Visits and reports on the homes selected are made by both official and volunteer inspectors.

One of the most notable results of the council's work is the reduction of mortality among illegitimate children from 27 per cent. to 4.58 per cent. All illegitimate children, whether destitute or not, are in its care and it has charge of 231 lying-in homes.

Pay for the Baby's Board.

This plan of paying the board of State Children is common in some Continental countries. It seems a good plan. With the nameless baby, fair treatment, constant supervision, and an open businesslike arrangement are the best guarantees for the baby's interests. The foster-mothers, who are the paid guardians, grow, it is said, quite fond and proud of the child, which is certainly not improbable. And while a good mother is everything to a child, a bad mother is worse than nothing; and it does not do to insist, if the mother will go back to the gutter and stay there, that she shall keep her baby there with her.

The Feeble-Minded Mother.

No fact in this whole field of work is better known than the fact that a great many of the mothers of nameless babies are feeble-minded. And Infant Mortality among these children is the greatest of all. Inasmuch as one of the other Reports of this Department is upon the Feeble-Minded, nothing more need be said here than that this is one more reason why the Province should provide for the permanent Care and Control of the Feeble-Minded, namely, that it would lessen Infant Mortality. It would seem only reasonable to ask that any feeble-minded woman who becomes a mother in any hospital, house of refuge or charitable institution, or elsewhere, should at once be reported to this Department.

How to Save Half of these Babies.

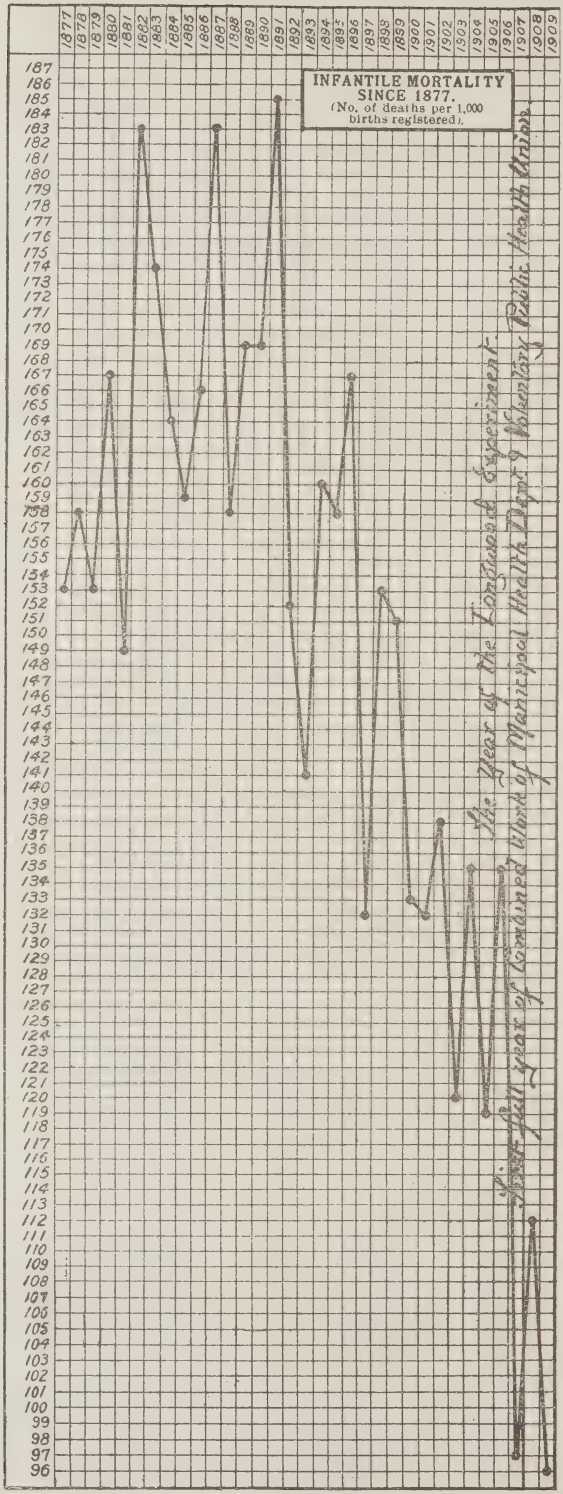
This has been done in Huddersfield, where Infant Mortality has been reduced to half of what it was, as the following diagram shows:

How it was Done.

This was not done without long effort, disappointment borne and difficultes overcome.

In 1903 Mr. Benjamin Broadbent was Chairman of the Health Committee, Dr. S. A. Moore was Medical Officer of Health, and the latter in 1903-4 undertook at his own initiative an inquiry into the causes of Infant Mortality, and showed that of all the deaths of infants in Huddersfield in 1902 under one year of age—

23 per cent. were from preventable causes.
56 per cent. were from doubtfully preventable causes.
20 per cent. were from non-preventable causes.


INFANTILE MORTALITY
SINCE 1877.
(No. of deaths per 1,000
births registered).
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This was the starting point. The next stage was the incubation period, otherwise known as the Committee Stage. On receiving Dr. Moore's Report, a Sub-Committee was appointed on Infant Mortality by the Health Committee. At its first meeting, December 14th, 1903, Dr. Moore was instructed to go on with his investigation and make a Report, which he did, the report being the fruit of much work and research, and being presented on May 9th, 1904. At this point the vital energy of the Committee ebbed and never more could a quorum be got! So like committees!

The leader, however, Mr. Benjamin Broadbent, still remained. The Committee had a name to live, and was dead, but he was alive. He was asked to be Mayor, and he accepted because he thought he could do more as Mayor for the Infant Mortality question than he could as Chairman of the Health Committee. It was then that the famous Baby's Own Promissory Note plan occurred to him, for, following the example of the French Mayor of Villiers le Duc, he gave a birthday present of £1 to every baby born in Longwood from November 9th, 1904, to November 9th, 1905, secured by a legal Promissory Note, due one year from date of birth. By those chiefly concerned—the mothers—after the first incredulity was overcome there was exactly the welcome which the new Mayor hoped for. The mothers never misunderstood in the slightest degree, never resented the interest shown in their babies, never dreamt than an attempt was being made to bribe them, or to purchase by money mother's love and care. They took it in kindness and sincerity, as it was meant.

There was, however, a very serious practical difficulty in getting to know when and where the babies were being born, and then of giving to the mothers the promissory notes securing the birthday present to the baby. When the first baby was announced the question was, "Who will take the promissory note?" The Mayor's sister came to the rescue and took the promissory note. That was the commencement of the work that has grown into the Huddersfield and District Public Health Union. As the number of babies increased it became impossible for one lady, however self-sacrificing and devoted, to look after them all. So in course of time another sister of the Mayor's began to help. By degrees, as the number of babies grew, so did the number of lady visitors. Thus a committee, without any formal appointment, formed itself, and by the end of the year it was a thoroughly efficient, compact working committee for the district of Longwood, with a complete and intimate knowledge of every baby and mother. A committee that thus grew of itself has naturally proved to be quite permanent, and it still exists as one of the district committees of the Huddersfield and District Public Health Union.

Then the defunct Infantile Mortality Committee came to life again.

The Public Health Union.

We have here the beginning from which grew the Huddersfield and District Public Health Union, a union of Municipal and Public Health Agencies, represented by the Mayor, the Medical Health Officer and the Municipal Sub-Committee on Infant Mortality, on the one hand, and on the other the Mayor's two sisters and all the ladies who volunteered, forming a Committee of Lady Visitors. The Public Health Union was inaugurated at a meeting in the Mayor's Reception Room on June 30th, 1905.

But not yet did all the difficulties end in this work which has made the name of Huddersfield known throughout the world. There were meetings and meetings —the Report was referred back. There were delays of six months at a time because

this and that was not ready. There were amendments and there was opposition to the salaries of the two medical ladies who were made Assistant Medical Health Officers, and so on and so forth; but at last the work began to go, with the result that everyone knows.

The following is a brief outline of the scheme, which could easily be adapted to the needs of any town or city or municipality in Ontario where people can *keep on*. That is the great necessity in Public Health work—*keep on.*

THE WORKING OF THE HUDDERSFIELD SCHEME.

The Huddersfield work against Infant Mortality is framed on a very simple plan.

The subject was first examined in detail as a whole. All the problems involved were gone into carefully. The various means of prevention both in England and on the Continent of Europe were ascertained and considered, and there emerged one clearly defined principle of preponderating importance on which to base all action.

The *mot d'ordre* is: *"Help the mother to nurse her infant herself in her own home."*

1.—Notifications of birth reach the Medical Officer of Health within 48 hours of the time of birth.

2.—Two Lady Assistant Medical Officers of Health visit the *homes,* enquire, advise, and help.

3.—The notifications are sent every Monday to voluntary workers—ladies who supervise, visit at intervals, and help *in the homes.*

4.—If the baby does not thrive, and is not under medical care, the case is referred to the Medical Officer of Health, and appropriate action is taken.

The Health Department of the Corporation is the central part of the organization. The official staff for this purpose consists of the Medical Officer of Health and two Assistant Medical Officers of Health. The two latter are fully qualified and duly registered medical women. Nearly the whole of their time is given to the work in connection with Infant Mortality, and the Medical Officer of Health exercises a general direction and supervision of their proceedings.

There is also a Voluntary Association called the Huddersfield and District Public Health Union. It is worked by upwards of 100 ladies. There is a close and intimate relation between the municipal and voluntary portions of the work.

By a special Act obtained in 1906, the Corporation have power to require the compulsory notification of births to the Medical Officer of Health within 48 hours. This Act has been in operation since November 1st, 1906. So far there has been no difficulty in working it. The notifications within the time limit have been 94 per 100 of the total births. It is made as easy and as convenient as possible to make these notifications, a postcard is sufficient; stamped and addressed cards are given to midwives, and on request to doctors and others, from the Health Office direct, or through the Assistant Medical Officers of Health or the ladies of the Public Health Union. Immediately upon receipt of the Notification one or other of the Lady Assistant Medical Officers of Health proceeds to the address given and verifies it. If the case is one where help or advice is likely to be of use, the opportunity for such help or advice is given by the visit of the Lady Doctor. There is no power of entry, and the visit is not enforced in any way. Cards and leaflets

of advice on the care of infants, very carefully thought out, are generally left. Wherever practicable breast-feeding is urged, and if there is any difficulty in this respect help and advice are proffered. It is at the very earliest stage of her motherhood that the mother requires the best available advice, and it is just then that she most readily welcomes and asssimilates teaching as to the best methods for her child's welfare.

This first visit by the Lady Doctors is followed by repeated visits in all cases where the circumstances call for them. It is at this point that the utility of the Voluntary Association comes into play. For the purpose of this Voluntary Association the Borough is divided up into separate districts, corresponding as far as possible with the Wards, but taking as a basis for a separate district the number of births; about 150 births per annum is the approximate number for one district. Over each of these districts is appointed a Lady Superintendent, and with her are associated a group of Lady Helpers, varying in number in proportion to the number of babies likely to be born; it is not reckoned that any one Lady Helper should have more than 15 to 20 babies on her list.

After the first visit of the Assistant Medical Officer of Health, the lists of babies are divided up into the districts of the Public Health Union, and each week the list of babies is sent to the Lady Superintendent of the district. She, in her turn, divides up the list week by week amongst her helpers. Each baby is thus placed under the supervision of some one or other Lady Helper, and she is expected to keep each under observation, and do what she can for its welfare. In all cases where the child is not thriving and where no medical practitioner is in attendance, she is expected to send to the Public Health Department for aid. This does not involve any gift or charity. The visit is a visit to the baby, and for its health, and it is a rule that no dole shall be given in any shape. In cases of need the various official, religious, and philanthropic agencies of the town are communicated with, such as the Charity Organization Society and the National Society for the Prevention of Cruelty to Children and the Invalids' Kitchen. In cases of sanitary defects information is given to the proper health authorities. The visits of the Lady Helpers, like those of the Assistant Medical Officers of Health, are entirely optional on the part of the visited. A very simple formula defines the position—not to cross the threshold unless an invitation is given to enter, not to sit down unless a seat is offered, to remember that every "room" of a cottage has as much right to privacy as any lady's drawing-room. There is thus no danger of intrusion or of unwelcome interference. In some cases only a very occasional visit is required, but in others more frequent visits are necessary. Where a case seems to require help, and no doctor is in attendance, the Lady Helper asks the Assistant Medical Officer of Health to pay a visit. A free use is made of printed matter, and in every available way general interest is aroused in the welfare of the babies, as well as individual attention being given to each one.

The value of the interworking of the municipal and official with the voluntary is expressed in apt but perhaps too flattering terms by Mrs. Sidney Webb, who says, after a personal investigation of the whole scheme, "I am convinced that you have discovered the key to raising the condition of the poorer classes in this systematic and sympathetic health visiting—voluntary effort in a setting of municipal activity."

The whole aim and object of the Huddersfield work against Infantile Mortality is to keep mother and child together in the home, and to give help to mother and child alike. That help should be of the very best—hence the employment of medical women—it should be given at the time most needed—that is, in the

earliest days of life; it should be at hand whenever required—this the constant and regular and repeated visits of the Helpers make it easy to secure.

Cost of Work.

The Voluntary Public Health Union is worked without subscriptions, the expenses being merely for stamps and circulars. A demand will be made for subscriptions when required, but the time and energy of the ladies engaged in visiting is a sufficient tax without putting on them the work of collecting subscriptions or giving money themselves. As to the cost to the Corporation, the only expenditure has been the salaries of the Lady Assistant Medical Officers of Health, and a rather heavy amount of printing charges. The whole has not been equal to £400 a year.

October, 1907.

Benjamin Broadbent, M.A., J.P.,
Chairman.

S. G. Moore, M.D., D.P.H.,
Medical Officer of Health.

The Mother.

The welfare of the Community is bound up in the bundle of life with the mother. A community is, in the eloquent words of Burke, "a partnership not only between those who are living, but between those who are living and those who are dead, and those who are to be born." So the Community would need to "Concentrate on the Mother," to use the famous phrase of the Right Hon. John Burns.

Dr. Sidney Barwise, County Medical Officer of Derbyshire, thinks that money spent on the education and rearing of children should be deducted from income tax, and hopes that we shall see pious founders of endowments for mothers of healthy stock and good family. That is, families healthy on both sides who have been members of friendly societies or similar organizations for, say, at least two generations, and have not been "in trouble with the police," nor in receipt of Poor Law relief."

When the Mother Works.

An outstanding event of 1910 in the Infant Mortality field has been the stated enquiry into whether or not the mother going out to work affected prejudicially the health and life of the infant.

Common sense tells us at once that it does, if only because it is sure to interfere with the mother's nursing her infant at all, or at proper intervals, or if there is a cradle room to meet cases of exceptional hardship and necessity in a factory, at least factory work prevents the mother's giving that care and quiet nurture to the infant that can be got in a home, and only there. So strongly was this felt by the Conference on Infant Mortality of 1906 that a resolution was passed by them asking legislation to increase the time of the mother's absence from work after childbirth required by Section 61 of the Factory and Workshop Act from one month to three months. There is considerable difference of opinion as to whether the change would be a help, and the Home Office has set on foot an investigation by requesting the Medical Health Officers in industrial centres to make enquiries as to the physical, social, and economic effects of the employment of women before and after childbirth, and in the following November a conference of these Medical Officers of Health was held at the Home Office. The result of the conference was that

arrangements were made for detailed enquiry on settled lines in several industrial communities with regard to births occurring in 1908. The particulars it was decided to collect included the mother's age and occupation, the mode of feeding the child, the age at death in fatal cases and the social conditions of the household. Distinction was to be made of women working in factories and workshops, those industrially employed at home, those otherwise employed (such as hawkers and charwomen) outside the Factory Acts, and those engaged in domestic duties only. These reports are now coming in.

The Medical Officer of Health of Birmingham, Dr. John Robertson, has just presented a very valuable report to the Birmingham Corporation. The actual investigations were entrusted to Dr. Jessie Duncan, who had the assistance of two women health visitors. The district selected for the enquiry covered an area of 289 acres and had a population of about 40,000 persons. The infantile mortality rate in 1908, in one portion, was 169 per 1,000 births, and in the other, 214 per 1,000, compared with 145 per 1,000 in the whole of Birmingham. Every baby born in the district during 1908 was visited. A schedule of enquiry was filled in, and close contact was kept with the mothers during the year, each baby being weighed when it was twelve months old. Incidentally, as might be imagined, the work of the ladies engaged in the enquiry was found to be of great value in producing a better condition of affairs in the homes. Some of the children were lost sight of during the year, but specific details were obtained of 1,212 mothers, 601 of whom were not industrially employed and 611 who were so employed.

As regards the actual deaths which occurred among the infants, the mortality was at the rate of 190 per 1,000 births among those children whose mothers were employed either before or after childbirth, while it was at the rate of 207 per 1,000 in the case of those whose mothers were not industrially employed. No doubt, as Dr. Robertson points out, the additional income brought in by the mother had an important influence in the prevention of poverty, which is one great cause of a high infantile mortality. Furthermore, many women who go to work are thrifty and energetic, and are determined not to get below the poverty line nor yet to neglect their home duties. The deleterious effect of poverty upon the mother as well as upon the infant is emphatically urged by Dr. Robertson, who makes an eloquent appeal for the establishing of some institution from which food could be supplied to hungry expectant mothers and to mothers who are nursing their infants, and are themselves badly nourished.

Dr. Robertson himself, however, points out that the number of cases investigated is too small to allow of any absolute conclusion being drawn from them. And it would appear that there is an abnormal situation in those districts of Birmingham when it is remembered that about 50 per cent. of the mothers go to work. Surely there are very few districts where half the mothers go to work, and we may hope, if we do our duty, to prevent this in Canada.

Dr. Robertson says that the figures dealt with in this report relate to women, many of whom are in a state of poverty, and, as already pointed out, this alone has such an evident pernicious influence on the health of the mother and her offspring that the influence of industrial employment is to a considerable extent marked. Bearing this in mind, and taking into consideration our previous investigations on somewhat similar lines, it may be said that in Birmingham the type of industrial employment in vogue does not appreciably influence the health of the mother or her infant when the standard of comparison is that of women in equally poor circumstances who are not employed industrially.

"While this is the opinion I have come to from an investigation of the facts in these poverty-stricken districts, I do not for a moment maintain that such industrial employment is free from all harmful influence. The mere fact that it prevents breast-feeding in the majority of cases is, in my opinion, a reason for some State interference. Here, however, it appears to be a question in this Birmingham area as to whether the additional poverty which would be occasioned by preventing mothers from working for, say, six months after a birth would not be the greater of two evils."

That is, the conclusion of Dr. Robertson is that the economic factor dominates the maternal employment factor in infant mortality. There are those who hold that, under existing economic conditions, any further State interference with the industrial employment of married women would aggravate rather than alleviate the very evil which the supporters of such interference would seek to remove.

Perhaps so. But then these economic conditions should not exist, and we must bend our energies to prevent them from arising at all. Miscarriage and premature births, as every doctor knows, are not infrequent results of overwork, and women who are not able to rest and take care of themselves until the baby is six weeks old, suffer often from uterine disease and its consequences.

As Sir John Simon says in his Investigations Into the Sanitary Condition of England, 1859-1865: "In proportion as adult women were taking part in factory labor or in agriculture, the mortality of the infants rapidly increased."

Nursing.

August forms the Eiffel Tower of the infant mortality year, as shown in the diagram. The same diagram shows also the value of maternal nursing. How insignificant the number of deaths among the babies who had maternal nursing as compared with those fed in any other way. This is *the* way to prevent infant mortality.

Enemies.

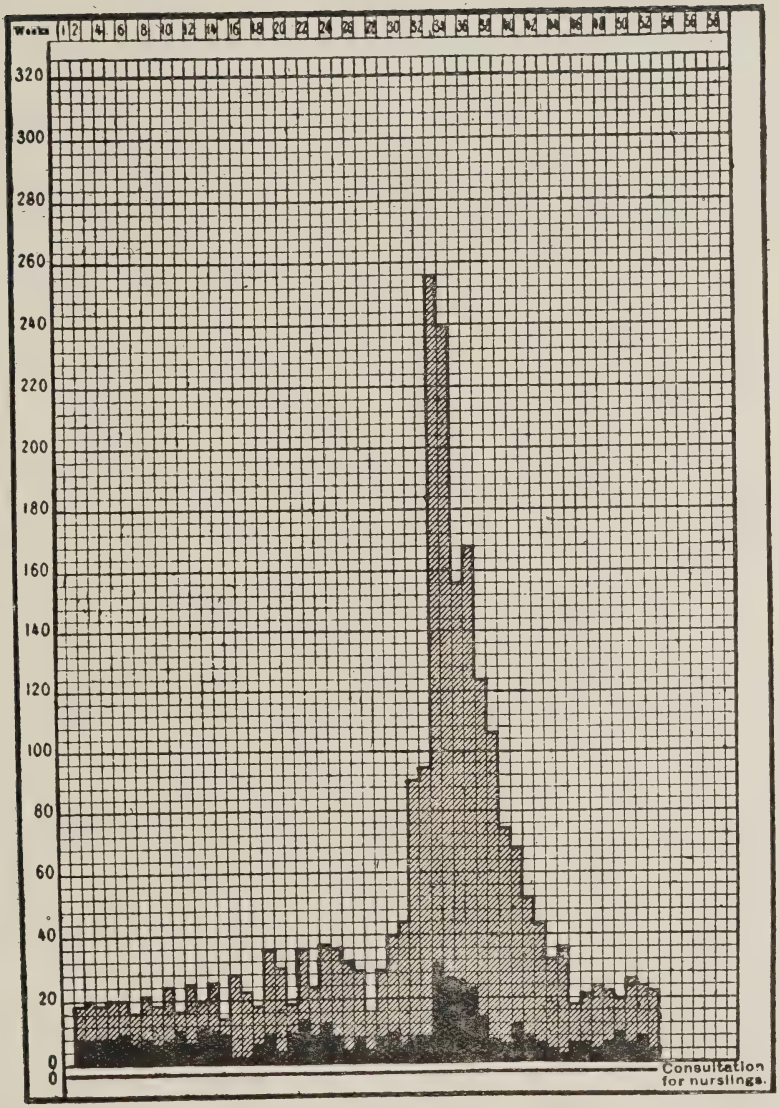
But now that the Health Visitor banishes by her persuasion the deadly "Comfort," or "Dummy," and the fatal long-tube bottle, we are beginning to feel that some babies are saved by this advice alone.

More Babies Nursed.

And the fact that everywhere any attention is drawn to the necessity, the number of babies nursed by the mother largely increases, is a very hopeful sign. Probably 90 per cent. of babies, or more, could be nursed at the mother's breast. Baron Kanchiro Takaki, Surgeon-General of the Imperial Japanese Navy, states that 99 per cent. of the infants in Japan were breast-fed.

Too Much Artificial Feeding.

But hand-feeding of sucklings has for years past been increasing as compared with breast-feeding. "The indications in this direction are numerous and distinct; the increase in the number of patent and modified foods for infants of suckling age and their wide advertisement, the unfortunate frequency with which they have been recommended not only by lay friends, but also by the nurses, midwives, and chemists, and even by doctors, the light-hearted manner in which not only the



The highest point (256) of the mortality is in the month of August. The black portion of the diagram indicates the number of deaths among infants nursed by the mother, and the lighter portion represents the number of deaths among infants fed in any other way.

fashionable but also the healthy working-class mother prematurely weans her babe unconscious of the risks it will run, the ready way in which the married factory girl returns to the factory and leaves her newly-born infant unsuckled, the promiscuous distribution of leaflets instructing mothers how to artificially feed their babies, and so on. These and other indications clearly point to the influences that have been at work, and it cannot be imagined that the result has been other than the increase of hand-feeding."—(Sykes.)

Nursing a Legal Right.

The right of the child to be nursed by the mother is recognized by at least one decision in our English Courts of Law. In the Divorce Court.—April 24th, 1906.

In the case of McLaglen v. McLaglen, Mr. Justice Bargrave Deane ordered a baby which had been forcibly carried off by the father to be returned to its natural food at its mother's breast. The natural right of the child prevailed over the common law right of the father.

Dr. Sykes' Enquiry.

In St. Pancras, in 1904, it was ascertained that only about 60 per cent. of infants were wholly breast-fed; in 1905 the proportion had risen to 66.8 per cent. The actual numbers in each year were 457 breast-fed of 772 cases enquired into during 1904, and 530 of 793 cases in 1905.

In 1905 fuller enquiry was made into 277 cases of prematurely weaned infants, and the ages and causes of weaning ascertained. In 71 cases there was only partial weaning. Of the 206 cases in which there was premature complete weaning, it was found that 78 were weaned at birth, 73 within the first month, and 55 subsequently (mostly during the second and third month).

Of these cases prematurely weaned, it was found that from one-half to two-thirds were probably preventable. Now, if of the 33.2 per cent. of sucklings not wholly breast-fed in 1905, one-half can be prevented, it follows that 83.4 per cent. can be wholly breast-fed, and, if two-thirds can be prevented, nearly 89 per cent. can be breast-fed.

Milk.

No consideration of the subject of Infant Mortality, however brief, would be complete without some reference to the question of Milk Supply.

Infection.

There are three milk dangers to the baby, and the first is infection. Dirt is infection; that is, poison. Dirt in milk means millions upon millions of germs, and these increase in the milk with incredible rapidity. Hence the success which attends all efforts to reduce infant mortality by enabling the mothers to give their babies clean cow's milk at about the age of nine or ten months, which is the best time for weaning to begin.

Contamination may occur while milk is in the hands of the dairyman, the distributor or the consumer, and each one needs careful education and supervision by the health authorities, so that the milk may not poison the baby. Infected milk in the cause of the deadly diarrhœa of infancy.

Adulteration.

The second danger is adulteration—adding water, removing the cream. Now cream, that is fat, is the most important ingredient of the milk as far as the health and the growth of the child is concerned. This is the case, even with the mother's milk, as was shown in July, 1910, before the British Medical Association in London, by Dr. Olive M. Elgood. At the request of Dr. Robertson, M. O. H. for Birmingham, her investigation was done in the Laboratories of the University of Birmingham, and the first thing proved by the experiment is that "The constituent of human milk most important to the healthy growth of the child is fat." So it is in cow's milk. The cream is of the utmost importance to the baby.

"It appears to be certain," says Dr. Newsholme, "that deficiency of cream in milk is especially provocative of rickets; and we know that throughout the country some of the chief vendors of milk 'tone down' their milk to a low standard, regardless of the mischief which their action involves. By the use of such milk, and of impoverished condensed milk, many infants throughout the country are being partially starved, and the results are to be seen in excessive child mortality and in weakly youth, often with deformity of limbs. They can also be seen in deformity of pelvis and in resultant unfitness for future child-bearing."

Preservatives.

Water is not the only adulterant used, as in the following cases, quoted by Dr. Fremantle in *The Child:*

A certain medical man in a London suburb found his child gradually losing flesh. Several of the chief physicians of the day were unable to find any sign of disease or any cause of the trouble. One finally asked the father about his milk. It was a supply from a large dairy company, who guaranteed its quality. "Do not trust that guarantee, but have it analyzed," was his advice. The milk was analyzed, and contained 5 gr. of boracic acid to the pint. Recent experiments show that 7 gr. of boracic acid in a day will upset the digestive faculties of an adult. The milkman was fined £25.

Milk for the Mother.

The best way in which to modify cow's milk, at least until the baby is nine month's old, is by giving milk to the mother. To take one or two cups of milk about half an hour before nursing the baby is the best plan to increase the quantity of the maternal milk supply.

Child Hygiene as a Division of the Health Department.

Early in 1908 the Department of Health and the Bureau of Municipal Research in New York City worked out some experiments, and ascertained that it would be a good thing to place in charge of one head all the duties of the Health Department which concerned the welfare of children.

Five of these have a relation to Infant Mortality:

(1) The control and supervision of midwives.
(2) The instruction of mothers in the care of babies.
(3) Supervision of foundling babies boarded out in homes.
(4) Inspection and sanitation of day-nurseries.
(5) Inspection of institutions harbouring dependent children.

The Division was organized at once under Dr. Josephine Baker, and began work January 1st, 1909. At the end of one year's work the results were gratifying—for there was an actual saving of 797 babies' lives, and the Infant Mortality was the lowest in the history of the City.

Midwives.

Forty per cent. of the births in New York City are attended by a midwife only. This is a large proportion. We do not seem to have any system of registering and licensing midwives in Ontario. This is a necessary thing, and should not be longer delayed. The careful supervision of midwives has helped much to reduce Infant Mortality, and has greatly lessened that terrible disease ophthalmia neonatorum.

Other Plans.

The Instruction of mothers and of the senior girls in schools is known to have helped greatly. The placing of every baby in a home is the modern method of solving the Institution problem. The constant supervision of Day-Nurseries and everywhere else that babies are cared for is the price of a reduction in Infant Mortality, and it is cheap at the price. But the striking reduction in Infant Mortality, and the saving of about a thousand lives, are the eloquent proofs of the success of this plan. Organization is good—all but indispensable. There is something without which all organization is rather useless, and that is—a man or woman with a heart and mind that can direct and lead the Staff and unify the work. Such a heart and mind one sees in the Report of the Medical Officer to the Local Government Board, in the achievements of the Mayor of Huddersfield, and in the work of Dr. S. Josephine Baker, Chief of the Division of Child Hygiene, Department of Health, New York City.

The Creche and Infant Mortality.

Where the employment of mothers outside the home is unavoidable, at least under present circumstances, and the mother must be out of the home for hours at a time, a well-conducted creche to which the mother can come to nurse a little baby at least twice or three times during the day helps to prevent Infant Mortality. The creche can take better care of the child than some neighbor, or very young child, often the only alternative.

Dr. Thomas gives the following in *Public Health:*

The creche is usually healthier and cleaner than the child's home, the treatment is more enlightened, and the method of feeding better adapted to the child's tender years.

Every creche can show children who have come there miserably anæmic, and suffering from rickets, whose health has visibly improved after some weeks of the creche treatment.

At the creche the child is taught cleanliness and good habits, becomes stronger and healthier, and is given a better chance in life.

Creches are under medical supervision, and the promptitude with which a case of sickness is treated often prevents more serious consequences.

The mother is required to bring the child clean; better methods of feeding are learnt, and the cleanliness and discipline of the creche insensibly react to the advantage of the home.

What Kills the Babies.

This diagram shows the chief causes of death among children under two years of age and the ratio of each cause to the total deaths in this age division. In each 100 deaths among children under two years of age 37 are caused by diseases of the digestive system; 23 by the impure air diseases; 19 by defects and accidents at birth; 9 by acute contagious diseases; 3 by diseases of the nervous system; 2 by tuberculosis; 2 by violence; 1 by venereal diseases, etc. 70 per cent. of such deaths can be avoided—with proper care:

Teach the Girls About the Baby.

There is a general feeling that we shall not make the progress that we might in preventing Infant Mortality until we teach the proper care of the baby where we teach everything else, viz., in the school. Dr. Janet Campbell's monograph is a step in the right direction, and no doubt already—though it was only issued in the end of 1910—not a few English girls have learned from it. It is only necessary that Dr. Campbell's ideas should reach the teachers, and they will be anxious to impart this knowledge to their pupils. A Bill on this subject was introduced into the House of Commons in July, 1910, by Dr. Addison, providing that all children attending public elementary schools shall, each week during school term, be provided with simple instruction in hygiene and the care of health, while each girl of the age or 12 years or more shall be adequately instructed in the care and feeding of infants. Every year about 120,000 children die in England before completing twelve months of existence as the result of improper feeding, while large numbers suffer from inadequate attention and maternal ignorance. The death-rate is very much increased in neighborhoods where the mothers have to go out to work and can only nurse their offspring morning and evening. The infants, between these periods, are looked after by older children of the family or girls hired for the purpose. Nearly one-third of the infant death-rate is due to various complaints which arise from improper feeding.

Dr. Addison says: We have no opportunities for teaching mothers of the present day, although good work is being done in some places by voluntary agencies. I consider it very necessary, in order that the next generation of mothers should understand how to feed their children properly, that instruction should be given to girls at an age when they will not be possessed by various prejudices. We find it very difficult to persuade many women of thirty years of age or more to give up feeding their children on sop and other deleterious substances. Milk is the only proper food for an infant, and I am persuaded if we can get girls to believe this, and to remember even this only, we shall reduce the infant death-rate in the next generation by 25 per cent.

Dr. Reed says: "Of course, there are many contributory causes of excessive infantile mortality, most of them preventible, but there is one which far exceeds all others in potency—namely, the prevailing ignorance among mothers as to the proper feeding of infants.

"No real headway will be made, however, until the rising generation of both sexes are systematically taught elementary health principles at school."

Dr. R. A. Lyster, the School Medical Officer to the County of Hampshire—a country in which the low infant death-rate of 83.6 per 1,000 births in 1908 may well be a subject for envy with less fortunate districts—has the same message. He says in his report for 1901:—

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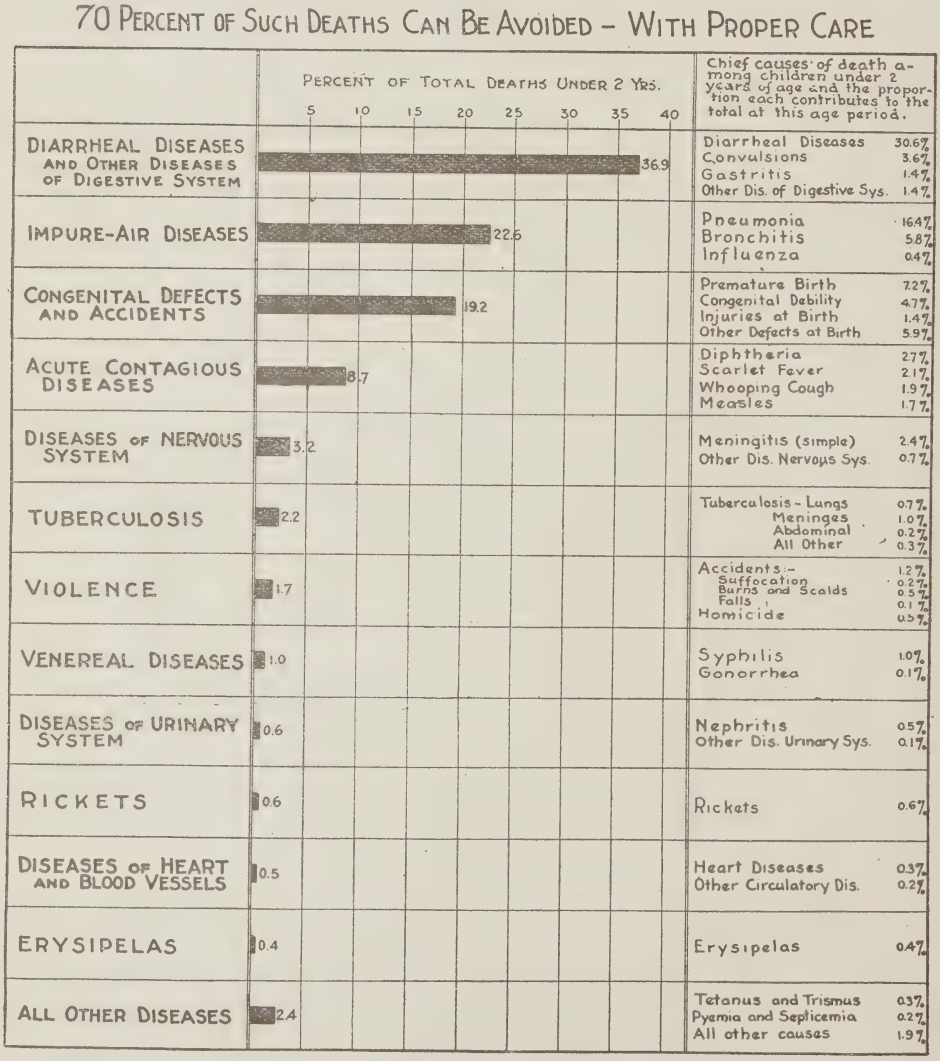

From the Bulletin of the Department of Health, Chicago.

"Until some very radical change takes place in the instruction given to girls of 11 years old and upwards, there will very little hope of improving the general habits of the people, or of decreasing the present deplorable wastage of infant life."

The Lancet says: "The amazing ignorance among the poor, which is one of the chief causes of our high death-rate among the infants, after the long years in which compulsory education has had a free play, is of itself eloquent proof of the non-practical character of the teaching which has gone by the name of education."

Registration.

To reduce Infant Mortality, we must first have an accurate, complete and satisfactory registration of births. Prompt and complete registration is of manifest importance. How can this be accomplished? The best legislation on the subject is comprised in the Notification of Births Act, 1907, in Great Britain, and the "Model Law," approved of by the American Medical Association, the American Public Health Association, and by the United States Census Office. Another Act of great importance is the Children's Act, 1908, on Infant Life Protection.

Notification of Births Act.

The most important provisions are as follows:—

1. The provisions of this section shall have effect in the area of any local authority in which this Act is adopted, by that authority, in accordance with the provisions of this Act,

(1). In the case of every child born in an area in which this Act is adopted, it shall be the duty of the father of the child, if he is actually residing in the house where the birth takes place at the time of its occurrence, and of any person in attendance on the mother at the time of, or within six hours after, the birth, to give notice in writing of the birth to the medical officer of health, of the district in which his child is born, in manner provided by this section.

(2). Notice under this section shall be given by posting a prepaid letter or postcard, addressed to the medical officer of health at his office or residence, giving the necessary information of the birth within thirty-six hours after the birth, or by delivering a written notice of the birth at the office or residence of the medical officer within the same time; and the local authority shall supply without charge, addressed and stamped post cards containing the form of notice to any medical practitioner or midwife residing or practising in their area, who apply for the same.

(3). Any person who fails to give notice of a birth in accordance with this section shall be liable on summary conviction to a penalty, not exceeding twenty shillings: Provided that a person shall not be liable to a penalty under this provision if he satisfies the Court that he had reasonable grounds to believe that notice had been duly given by some other person.

(4). The notification required to be made under this Act shall be in addition to and not in substitution for the requirements of any Act relating to the registration of births; and any registrar of births and deaths whose sub-district or any part thereof is situate within any area in which this Act is adopted, shall at all reasonable times have access to notices of births received by the medical officer of health, under this Act, or to any book in which those notices may be recorded, for the purpose of obtaining information concerning births which may have occurred in his sub-district.

(5). This section shall apply to any child which has issued forth from its mother after the expiration of the twenty-eighth week of pregnancy, whether alive or dead.

(6). Any expenses incurred by a local authority in the execution of this Act shall be paid as part of the expenses of that authority, in the execution of the Acts relating to public health, and in the case of a rural district council shall be paid as general expenses.

It would seem to be better, in this Province, to provide for notification and registration at one and the same time and place. The Act seems to have worked well in Great Britain: It is in force in 195 areas of local government, namely:—

(1). The whole of the administrative county of London, comprising the City of London and the 28 metropolitan boroughs.

(2). 46 County Boroughs.

(3). 46 non-County Boroughs.

(4). 57 Urban Districts.

(5). 17 Rural Districts.

In some instances, prosecutions have taken place under the Act. There is a general feeling that the registration of births should be paid for by the Government, or other authority. The doctor ought to be entitled to a fee. Of course, some trouble must be taken by someone to get the machinery in motion. Dr. Matthew Hay (M.O.H., Aberdeen), says, that when the Act came into force he sent a summary of its provisions to all the medical men and nurses in the town, pointing out what they were called on to do.

"For a time there were omissions, and there are omissions still, but they have been reduced to almost vanishing point. We get from each registrar in the city a return of the births registered with him each week, and these we carefully compare with the notifications we receive. Of course, that information was available for us before, but then as parents are allowed three weeks to register, and generally wait until the last day before doing it, the child might be dead, or might by bad nursing have received irretrievable damage before we heard of the birth had we relied solely on that source.

"Thirty-six hours are allowed under the Act for notification being made, but we allow them a week. When, however, we come across a late notification we send a note to the parent, drawing his attention to the penalty he has rendered himself liable for. In the same way in cases of failure to notify we send a punitive letter to the parent, who is of course the first party mentioned in the Act. The parent who receives such a note generally writes or comes here in fear and trembling to explain that he did not know such a duty was imposed upon him. I point out to them that they are supposed to know the law. The result is that these people speak to their doctor about the trouble they have got into, and saying he should informed them what to do. A doctor naturally does not like to have differences with his patients, and accordingly he makes it a point in all further cases to inform the parent or the nurse of the necessity for notifying the medical officer of the birth and of the penalty to be inflicted for not doing so. In this manner, therefore, the medical men are drilled, and the efficient working of the Act secured.

"What medical men contend is that they receive no fee for notifying. I think they ought to be paid, but of course we have not the making of the law, but only the administration of it."

A Registrar Required.

Another important point is to charge some one with this duty and appoint him to perform it. A Registrar is required. Sometimes such an official puts things

at once on a proper basis. This depends on the kind of man who is Registrar. Some Registrars make a house to house visitation every little while to verify and discover all births. In Detroit, when the new law was put in force, nearly three times as many births were reported in the first six months after the Act went into force as there were in the six months before. There were found in Michigan 224 births never reported at all.

American Model Law.

The following are the most important provisions of this law:

Be it enacted by the Legislature of the State of ————

Section 1.—That the State Board of Health shall have charge of registration of births and deaths; to prepare the necessary methods, forms, and blanks for obtaining and preserving such records, and to ensure the faithful registration of the same in the township, cities, counties, and in the Central Bureau of Vital Statistics at the Capital of the State.

Section 2.—That the Secretary of the State Board of Health shall have general supervision over the Central Bureau of Vital Statistics which is hereby authorized to be established by said Board, and which shall be under the immediate direction of the State Registrar of Vital Statistics, whom the State Board of Health shall appoint within thirty days after taking effect of this law, and who shall be a medical practitioner of not less than five years' practice in his profession, and a competent vital statistician.

Section 12.—That all births that occur in the State shall be immediately registered in the districts in which they occur, as hereinafter provided.

Section 13.—That it shall be the duty of the attending physician or midwife to file a certificate of birth, properly and completely filled out, giving all the particulars required by this Act, with the Local Registrar of the district in which the birth occurred, within ten days after the date of birth. And if there be no attending physician or midwife, then it shall be the duty of the father or mother of the child, householder, or owner of the premises, manager or superintendent of public or private institutions in which the birth occurred, to notify the Local Registrar within ten days after the birth, of the fact of such a birth having occurred. It shall then, in such case, be the duty of the Local Registrar to secure the necessary information and signature to make a proper certificate of birth; provided, that in cities the certificate of birth shall be filed at a less interval than ten days after birth, if so required by municipal ordinance (or regulations) now in force or that may hereafter be enacted.

Where is Ontario?

We do not find the name of Ontario in the following list. Why not? It may well be doubted whether we get 90 per cent. of our births registered, and we need that number to "count" with the others. This may be one explanation of why our infant mortality is so high. The births are not registered. One hundred and fifty-nine per 1,000 for Toronto (still-births not included) is a terrible death-rate. In England it is only 109.

In the international tables given each year in the Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, vital statistics are given for many successive years for the following countries:

England and Wales.
Scotland.
Ireland.
New South Wales.
Victoria.
Queensland.
South Australia.
Sweden.
Russia.
Finland.
Germany.
Austria.
Hungary.
Roumania.
Bulgaria.
Servia.
Western Australia.
Tasmania.
New Zealand.
Ceylon.
Jamaica.
Denmark.
Norway.
Netherlands.
Belgium.
France.
Switzerland.
Spain.
Italy.
Japan.
Chili.

The registration of births was really primarily to obtain the necessary record for legal purposes. But in obtaining these there were unconsciously laid the foundations of sanitary science. The beginning of Registration of Births and Deaths in 1836 ushered in the era of sanitation in which we now live.

Reasons for the registration of births and deaths may be stated as follows:

(1) Knowledge of the movement of population (demographic uses).

(2) Protection of the lives and health of the people (sanitary uses) and

(3) Protection of the rights of the individual and of the community (legal uses).

This has been well expressed by the preamble to the Registration Law of 1851 in Pennsylvania:

"*Whereas,* From the death of witnesses and from other causes, it has often been found difficult to prove the marriage, birth, or death of persons, whereby the rights of many have been sacrificed and great wrongs have been done; and

"*Whereas,* Important truths, deeply affecting the physical welfare of mankind, are to be drawn from the number of marriages, births, or deaths that during a term of years may be contracted or may occur within the limits of this extensive commonwealth; therefore ——"

In the resolution passed by Congress for 1903, approving of such legislation, we have a brief statement of the reasons for the registration of births, as follows:

The registration of births and deaths at the time of their occurrence furnishes official record information of much value to individuals; and

The registration of deaths, with information upon certain points, is essential to the progress of medical and sanitary science in preventing and restricting disease and in devising and applying remedial agencies; and

All of the principal countries of the civilized world recognize the necessity for such registration and enforce the same by general laws.

To these more general reasons may well be added another:

Registration of births is a great help in reducing infant mortality. School hygiene might help us here. It is evident that an effort should be made to impress on parents, teachers, nurses, and doctors the great importance of notification and prompt registration of every birth.

And probably some payment should be made for this. They did that in Huddersfield. One shilling was the sum paid there.

But even the direction of public attention to it would do great good.

The Time Has Come.

In many labors we lose our pains. The cause was not worth while, or the time had not come. Not so here. The time has come to act. The Report of the Registrar-General for Ontario for 1908, page 9, says that in Ontario there were: Births, 55,388; deaths under one year, 6,895; infant mortality rate, 125 per 1,000.

Table showing the total number of Births, also of Deaths under one year of age and ratio of such deaths per 1,000 births in each City in Ontario, 1908. Still-births included.

CITIES.	Births.	Deaths under one year old.	Ratio of such deaths per 1,000 births.
Belleville	248	49	197.6
Brantford	597	95	159.1
Chatham	229	41	179.0
Fort William	442	110	248.8
Guelph	307	57	185.7
Hamilton	1,822	349	191.5
Kingston	395	71	179.7
London	1,024	205	200.2
Niagara Falls	214	47	219.6
Ottawa	2,035	521	256.0
Peterborough	459	78	169.9
Port Arthur	392	95	242.3
St. Catharines	294	50	170.1
Stratford	301	41	136.2
St. Thomas	334	62	185.6
Toronto	7,938	1,535	193.4
West Toronto	433	83	191.7
Windsor	395	67	169.6
Woodstock	204	20	98.0

A Great and Holy Cause.

This cause is worth while. As Lord Robert Cecil said at Huddersfield last June:

It is a great and even a holy cause. Child life is that on which the whole future and prosperity of the country depend. If there grew up a carelessness about infant life it was a sure sign of the degeneration and degradation of the people of the country. No greater social work had been done by the preaching of Christianity than the great change it had made in the minds of men with regard to the claims of infant life. To this day in some heathen countries, in China, for instance, it was the custom of the people to put out to die any of their children who were for any reason an inconvenience to their parents. Under the laws of the Roman Empire it was no offence to kill a child under one year old. It was Christianity and Christianity alone that taught that the life of a child was as sacred as the life of any man or woman, that every child born had an immortal soul, and that the man or woman who through negligence or wickedness sacrificed the life of a child was every bit as guilty as a murderer who killed a full grown man or woman. He earnestly commended the work, not only to the people of Huddersfield, but to the people of the country, and he earnestly hoped they would never desert the cause they had so nobly and so successfully taken in hand.

WAKE UP, ONTARIO!

Ontario should take up this cause. There is not very much difference between the murderer and the one who stands by and sees those die whom he could save. The infant mortality rate must be reduced, beginning in the cities.

I have the honor to be,

Sir,

Your obedient servant,

HELEN MACMURCHY.

INFANT MORTALITY

THIRD REPORT

BY

DR. HELEN MacMURCHY

TORONTO

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INFANT MORTALITY.

To The Hon. W. J. Hanna,
Provincial Secretary.

Sir,—All over the world interest in Infant Mortality has been increasing. In Canada this was marked in 1911. It has been the subject of numerous public addresses. The chief newspapers in Halifax, Montreal, Ottawa, Kingston, Peterborough, London and Berlin have devoted leading articles to this subject. The *Kingston Daily Whig* says: "It is a great problem and the Provincial Government should try and solve it."

The *Montreal Daily Star* emphasizes the duty of the large cities of Canada in regard to Infant Mortality.

The *Ottawa Free Press* says: "Governments in this country spend hundreds of thousands to teach the farmer how to raise colts and calves and pigs. Not a dollar is spent to teach the mother how to rear her young. The light seems to be breaking, however, and it is to be hoped that the Ontario Government will initiate steps to carry out the recommendations of its investigator."

The *Peterborough Examiner* says: "Herein is raised a more important question than reciprocity or tariffs. These have to do with our pockets; but the question of marriage of the fit or unfit has to do with the quality of our homes, the good or bad quality of our population."

No Excuse.

The *Toronto World* says: "There will be no excuse for us until we have a very much better rate. In fact, the death-rate for babies ought to be less than that for adults. Young fathers and mothers ought to take pains to learn the few necessary things which babies need to keep them living and well."

It remarks in another issue, referring to a table in the Second Report showing the relative Infant Mortality of all the cities of Ontario: "Does the City Council wish to get Toronto any lower on this list?"

Enquiries About Infant Feeding.

Interest has been shown further by a number of letters received at the Provincial Secretary's Department. Some of these letters have asked for information as to the feeding of infants, and a few notes on that subject have, therefore, been added to this Report.

Letters from Abroad.

Other letters came from London, Liverpool, Edinburgh, New York, Boston, Philadelphia, Washington, Chicago, Australia, and New Zealand. From the Department of Health in Chicago came a request for 50 copies of the Report for the

use of as many nurses who were employed by the Department under Dr. Caroline Hedger, in the successful effort made by them in 1911, to reduce Infant Mortality. This request was granted by the Hon. W. J. Hanna. The Report is now out of print.

The Work of Two Canadians.

Two important pieces of work were done in Ontario in 1911 on Infant Mortality. One was a thesis presented for the degree of M.A. in the University of Toronto on the Vital Statistics of Ontario and the Registration of Births in Toronto. The other was the work of a graduate in Medicine of the University of Toronto who was appointed Medical Health Officer of Fort William in 1910.

The thesis presented by Mr. R. E. Mills, B.A., Fellow in the Political Science Department, aimed to review and criticise the Vital Statistics of Ontario at present available in such a manner as to provide a statistical basis for future practical campaign work in connection with the improvement of birth and death rates, and especially the infant death-rate; and also to make a plea for better statistics from which to work in future.

Mr. Mills' line of argument is somewhat as follows:

So long as the census figure for net births in Toronto, viz., 20.4 per 1,000 population is obtained by taking the sum of the following—

Number of children living under 1 year of age; number of children living in census year who died under 1 year of age, it cannot be wondered at that we find the birth-rate for Toronto (given in the Report of the Registrar-General for Ontario as 21.8, which Mr. Mills finds to be 25 per cent. too low), still more misleading than the Ontario returns.

In Ontario We Have—

1. The Registrar-General—The Provincial Secretary. 2. Deputy Registrar-General—The Secretary of the Provincial Board. 3. Division Registrars—The Municipal Clerks.

The Division Registrars are paid (59 Vict. Ch. 2, S. 24) 20 cents for each registration. (Cities and towns of more than 10,000 population may limit the aggregate sum to be paid.)

The law provides, R.S.O., 1897, Ch. 44, S. 15:

1. That the birth shall be notified to the Division Registrar—

(1) Within 30 days.

(2) By the father or by the mother or by some person standing in his or her place, or by the occupier of the house where the child is born, or by the nurse present at the birth.

2. That the birth shall be notified to the Division Registrar forthwith by the attending physician.

3. That the penalty of non-fulfillment shall be not less than $1.00, and not more than $10.00 and costs.

From the Church Register.

In order to have a basis of facts and figures for this matter Mr Mills transcribed from the register of baptisms in five churches of Toronto the following particulars from January to November, inclusive, 1908:

1. Name of each infant baptized.
2. Date of each infant's birth.

3. Name and address of father and mother. (These five churches were selected with a view to representing all classes of the population, but unfortunately no way presented itself of including the Jewish population of Toronto, which is now stated to be about 20,000.)

The Five Churches.

Name of Church.	No. of Births
St. Paul's (R. C.)	117
Our Lady of Lourdes (R. C.)	23
St. Paul's (C. E.)	45
St. Patrick's (R. C.)	98
St. Anne's (C. E.)	92
	375

TORONTO'S REGISTER OF BIRTHS.

In the office of the City Clerk of Toronto there is kept an alphabetical birth register. Each of these 375 children's names was then searched for in the register and 268, or 71.5 per cent., were found.

As shown by the following table:

	Registered.	Per cent.	Unregistered.	Per cent.	Total.
St. Paul's (R. C.)	80	68.4	37	31.6	117
Our Lady of Lourdes (R. C.)	17	73.9	6	26.1	23
St. Paul's (E. C.)	37	82.2	8	17.8	45
St. Patrick's (R. C.)	57	58.2	41	41.8	98
St. Anne's (C. E.)	77	83.7	15	16.3	92
	268	71.5	107	28.5	375

QUESTIONS.

But how many children were not baptized at all?

What about the illegitimate infants, of whom only three or four were found among the 375?

What nationality were the parents?

In order to answer this last question Mr. Mills compiled the following, again comparing with the City Register of Births. Children baptised in St. Patrick's Church (R.C.), arranged according to the birthplace of the father, January to November, 1908:

Fathers born in—	Total number Baptised.	Number registered.	Per cent. unregistered.
Canada	32	11	34.4
Italy	37	12	32.4
Poland	10	7	70.0
Syria	5	4	80.0
Austria	3	3	
Germany	1	0	
China	1	1	
United States	2	2	50.0
England	5	1	
Scotland	1	0	
New Zealand	1	0	
	98	41	41.8

Only 75 Per Cent. of Births are Registered.

The conclusion drawn by Mr. Mills is that 25 per cent. may be taken as a fair estimate of the error in Registration of Births in Toronto.

One-fourth of our births are not registered or numbered at all. This, he points out, would make the number of births in Toronto in 1908, 10,584 instead of 7,938, and the birth-rate per 1,000 population 46.1 instead of 34.6 in Toronto. In Ontario, assuming that an equal error exists, the number of births in 1908 would be 76,207 instead of 57,155, and the birth-rate per thousand population would be 34.1 instead of 25.6.

Births Registered Twice.

Mr. Mills has made the interesting discovery that some births are registered twice. Out of 636 birth registrations in the City Register for Toronto no less than twenty, or over 3 per cent., are found to be registered twice. This may explain in part the discrepancy in the following figures:—

Number of Births in Toronto.

——	City Clerk's Returns.	Registrar General's Returns.
1900	4,530	4,534
1901	4,445	4,445
1902	5,065	5,044
1903	5,040	5,041
1904	5,283	5,286
1905	5,816	5,826
1906	5,985	5,985
1907	6,715	6,680
1908	7,945	7,938

The following tables were prepared by Mr. Mills from the census figures:

Number of children under 5 years of age per 1,000 population of all ages.

Year.	——	Year.	——
1871	144	1891	120
1881	131	1901	103

Number of Children under 5 years of age per 1,000 women of 15 to 45 years of age.

Year.	——	Year.	——
1871	650	1891	477
1881	571	1901	424

Total number of children living under 5 years of age.

Year.	——	Year.	——
1871.....	232,596	1891.....	239,847
1881.....	252,053	1901.....	224,582

WHAT DOES THIS MEAN?

What do these Dominion Census figures mean for Ontario? With a larger population in 1901 we have actually a smaller total number of children under 5 than we had in 1871. Is this true? If it is, it is appalling.

Registration of Births in Ontario.

No one seems to know much about the registration of births in Ontario. The form given below will probably be seen for the first time by many readers of this report. The detachable part is to be filled in by the doctor, but probably if the first ten doctors who pass the City Hall be stopped, shown this form, and asked if they have ever seen it before, it will be found that at least two of them have never seen it. How then, are they going to fill it up, tear it off, send it to the Division Registrar, and give the other part to the father or other responsible person, and tell him or her what to do with it?

Form 3. **PROVINCE OF ONTARIO.**

Municipality of.....County of.....

Official Return of Birth.

Questions to be answered by the Informant of Birth.

No Penalty will be incurred if this Birth is registered within 30 days.

1	What is the full name of child?	Surname. Christian names.
2	When was the child born?	.....day of.....19..... .....Hr.....Min..... M.
3	Where was the child born? St., number or Concession and Lot.	If in Hospital, give its name.
4	Male or Female.	
5	Are the parents married?	
6	Full name of Father?	
7	Occupation of Father?	
8	Full Maiden Name of Mother.	
9	If she has been more than once married give names of former husband or husbands.	
10	Where were the parents married?	
11	When were they married?	
12	If not married, give full name of Mother.	
13	Is she Single, or a Widow? If a Widow, state name, occupation and date of Husband's death.	
14	What is her occupation?	
15	Name of Physician attending.	
16	Your relation to child?	
17	Were you in house at time of birth?	
18	Your signature and address. Date	

Detach along this line and mail in Free Envelope forthwith to Division Registrar.

PROVINCE OF ONTARIO.
Medical Practitioner's Notice of Birth.

I hereby notify of the following Birth in accordance with Section 14 of the Vital Statistics Act, 1908.

When was the child born? | Sex.	Maiden Name of Mother.
Where was the child born? If in a hospital, give its name.	Address of Parents.
Name of Father.	State whether Twin, Triplets, Illegitimate or Still Birth.
Signature and Address of Medical Practitioner and date.	

Why are Births Not Registered?

The reasons for the neglect of birth registration in Ontario are not well ascertained. But the magnificent distances of Canada, the difficulties of the early settlers, and the consequent lack of training of the community as to the importance of vital statistics, as well as the formation of the habit of neglecting registration have probably something to do with it. The Division Registrars have no great security of tenure, and are only paid a maximum of 20 cents for each registration.

Again, we have not the weekly returns of births, marriages and deaths published prominently as important news items in the daily papers. This would help. We are even far behind in the publication of our Provincial Vital Statistics. But the returns for 1909 are published, those for 1910 are prepared, and it is hoped that those for 1911 will be published before the end of 1912. This will mark an advance.

Finally, registration of births really depends on the physician. He should notify the Division Registrar and he should give the other portion of Form 3 to the father or other responsible person and tell him to register the birth. As a matter of fact, the physician often does neither the one nor the other.

Non-Registration of Births.

Mr. Mills studied the Toronto Birth Register Book from Jan. 1 to Feb. 28, 1911, and found 885 births registered, of which 629, or 70 per cent., were never reported by the physician at all. In every case there was a physician in attendance, according to the entry.

On the other hand 130 births were reported by physicians but were not registered, and of these 56 were in January, 1911, and therefore registration was overdue the 30 days allowed by law.

How to Secure a Better Registration.

Prosecutions under the Birth Registration Law in Ontario are almost or quite unknown. Parents generally are entirely unaware of their duty in this matter, and unless and until the people of this Province and especially parents and the medical profession

1. Have their attention aroused and strongly directed to this duty and why they should do it.

2. Are officially informed that the law must be carried out,

no improvement is likely to take place. It is perhaps not unreasonable to think that physicians should be paid for this work.

Frequency of Still Births.

It is not possible to state with what frequency still births occur until the subject is farther investigated, and until the registration of births is more accurate. Two records were published in England in 1911, one by Dr. Foulerton, County M. O. H., East Sussex, and the other by Dr. Lyster, County M. O. H. for Hampshire. It appears that in the latter county an investigation showed that in the practice of certain midwives still births appeared to be much more frequent than in the practice of others. Thus, nine midwives who attended 260 births had

a total of 20 still births, or nearly 8 per cent. In East Sussex from 1906 to 1910 there were 9,012 births attended by midwives, and of these 1.73 per cent. were still births.

On the other hand, among all the births attended in connection with a London maternity charity the percentage of stillbirths was 2.7, while in another London maternity charity it was 4.3 per cent.

Registration of Still Births in Other Countries.

Still births are not registered in England. In France and Belgium children dying before or after birth, if before registration are recorded as still births, but are not included in the general birth statistics. In Italy, Germany and the four Scandinavian countries the term still birth is used in a medico-legal sense, *i.e.*, "a viable infant (having had over 6 months of intrauterine life or being twenty-five centimetres long) which is dead without having breathed" and the statistics are given separately. (From Dr. Newsholme, quoted by Mr. Mills.)

Mr. Mills draws attention to the importance of giving birth and death statistics with still births not included, and also of giving separately the number of still births registered as births and the number of still births registered as deaths, as follows:—

In the report itself still births are included in both birth and death statistics. The impossibility of comparing the rates derived from such figures with those of other countries where the deduction is made is apparent from the following tables. (Mr. Mills.)

—	Ontario, 1907.	Toronto, 1907.
Crude Birth Rate	24.1	29.5
Net "	23.5	29.2
Crude Death Rate	15.0	20.2
Net "	14.3	18.7
Crude Infant Death Rate	150.1	196.6
Net " "	120.4	148.1

Deaths Under 1 Year of Age.

Year.	Crude Figures.	As Corrected by the Registrar General.	Still Births Registered as Deaths.
1899	956	777	179
1900	1,064	880	184
1901	886	711	175
1902	884	713	171
1903	1,024	827	197
1904	1,161	903	258
1905	1,208	935	273
1906	1,195	918	277
1907	1,313	976	337
1908	1,535	1,215	320

Births.

Year.	Crude Figures.	As corrected by the Registrar General	Still Births as births.	Corrected figures.
1899.....	4,006	3,827	13	3,993
1900.....	4,534	4,350	74	4,460
1901.....	4,445	4,270	91	4,354
1902.....	5,044	4,873	91	4,953
1903.....	5,041	4,844	83	4,958
1904.....	5,286	5,028	104	5,182
1905.....	5,826	5,553	132	5,694
1906.....	5,985	5,708	116	5,869
1907.....	6,680	6,343	89	6,591
1908.....	7,938	7,618	not given.	.....

"Prior to 1908 it has been always possible to correct both birth and death figures by subtracting from each the number of still births registered as such. But such a correction since 1908 is impossible, as, for some unaccountable reason, the Registrar General has omitted to publish the number of still births registered as births. It is to be hoped that this at least will be remedied in subsequent reports of the Department." (Mr. Mills.)

What is a Still Birth.

It may be pointed out that in Ontario we have no legal definition of still birth. This is needed.

Local Vital Statistics.

From the city and hospital registers and from the Police Census books Mr. Mills has prepared vital statistics for three sections of the city for 1908.

1. The Ward, east of University Ave., west of Yonge St., north of Queen St., south of College St.

2. Eastern District, east of Sherbourne St., west of Don River, north of water front, south of Queen St.

3. Rosedale, east of Yonge St., north of Bloor St.

The statistics are shown in the following tables:

District.	Population (Police Census).	Births (Minus Still Births).	Deaths (Minus Still Births).	Deaths under 1 year of age (Minus Still Births).
1908				
1. The Ward	12,330	327	151	45
2. Eastern District.....	8,378	212	169	53
3. Rosedale	5,694	97	52	11

District.	Births per 1000 Population.	Deaths per 1000 Population.	Deaths under 1 year per 1000 Births.
1. The Ward	26.5	12.2	137.6
2. Eastern District	25.3	20.2	250.0
3. Rosedale	17.0	9.1	113.4
Toronto City	25.9	14.4	155.5

Corrected by 25 per cent. error in Birth Registration.

District.	Births per 1,000 population.	Deaths per 1,000 population.	Deaths under 1 year per 1,000 births.
1. The Ward	35.3	12.2	103.2
2. Eastern District	33.7	20.2	187.5
3. Rosedale	22·7	9.1	75.0
Toronto City	34.5	14.4	116.2

VITAL STATISTICS OF TORONTO, 1908.

Crude figures 1908.				Corrections.	Corrected figures 1908.			
Birth rate per 1000 population.	Marriage rate per 1000 populati'n	Death rate per 1000 popula. tion.	Infant death rate under 1 yr. per 1000 births.		Birth rate per 1000 population.	Marriage rate per 1000 populat'n.	Death rate per 1000 population.	Infant death rate. Deaths under 1 year per 1000 births.
34.6	14.9	20.4	193.5	(1) For still births..	34.1	.....	19.0	155.5
				(2) For incomplete registration of births and for still births....	45.5	.....	.....	116.6
				(3) For error in the population census, incomplete registration of births and still births..	34.5	11.3	14.4	.....

These results are of great interest and will repay careful study.

INFANT MORTALITY REDUCED AT FORT WILLIAM.

Fort William is one of the most progressive cities in Canada. Its increase in population from 1901 to 1911 was 354 per cent.—greater than the percentage increase of any other city in Ontario, though Port Arthur shows in the same period an increase of 249 per cent. and North Bay 205 per cent.

Woodstock has a birth rate of 12.9 per 1,000 population and Chatham a birth rate of 21.1 per 1,000 population and Toronto a birth rate of 32.0 per 1,000 population.

Fort William again heads the cities of Ontario with a birth rate of 98.1 per 1,000 population. But it did not keep them all. Dr. Wodehouse, appointed Medical Health Officer in 1910, found that in the months of July and August, 63 infants under one year of age died. He found himself without any assistance in the Department of Health, except one nurse, who was Superintendent of the Isolation Hospital, and in the hot days of July and August a baby was being buried every day in Fort William, all of them from summer diarrhœa.

The Health Officer Visits the Mothers.

Dr. Wodehouse made a list of the names and addresses of all the dead babies, and for his own satisfaction, went himself to see the mothers and talk to them.

Why the Baby Died.

He found that one baby (3 months old) had been given half a soda biscuit with each feeding, one had been fed on sour milk all day except the first feeding in the morning, and two had had green uncooked fruit to eat. *But not one of these 63 babies, who had died in Fort William in July and August, 1910, had been nursed by the mother.*

The Plan.

With this information the Doctor went to work. He asked for a laboratory for examination of milk and water. He also secured:

1. A Milk By-law.
2. A Compulsory Sewer By-law.
3. The appointment of a Sanitary Inspector.
4. The appointment of a District Health Visiting Nurse.

The Plan Succeeds—Sixty-six Per Cent. Saved.

By this plan of campaign carried out at once, Dr. Wodehouse was able to carry Fort William through the hot weather of July and August in 1911 with only 21 deaths of infants under one year old. This is all that is necessary. Personal supervision, personal interest, personal teaching by an expert (a doctor or a nurse), given the sewer and the pure milk supply, then the death rate under one year old goes down. 21 is only 33 1-3 per cent. of 63.

Who Helped.

The newspapers were a great help in the campaign to Save the Baby. Mayor Young, of Fort William, helped. He gave a banquet on June 7th, 1911, "to all those who are actively associated with infants." Dr. Wodehouse says this is the "most interesting and satisfactory work I ever undertook."

OTTAWA.

Dr. Shirreff, Medical Officer of Health in Ottawa, with the assistance of the members of the Local Council of Women and others, began, in 1911, a campaign to reduce infant mortality. The investigation carried on by the Department of Health showed that of 157 infants under one year of age, who had died of diarrhœal disease, only 21 were breast fed. A nurse was engaged to help in the work and certified milk was procured from a dairy near the city, the milk being delivered in Ottawa about three or four hours after milking. It was bottled at once, and in some cases was modified by the addition of 16 per cent. cream, lime water, or barley water and milk sugar, according to the prescription of a physician or of the Health Department. Every effort was made to encourage nursing by the mother.

A Good Result.

Though carried on for a few months only, the result of this effort was gratifying. It saved lives. Of the babies under the care of the nurse, from June 20th to September 1, 1911, a much smaller number died than would formerly have died. The percentages are for those under the care of the nurses, 1.6 per cent. of the breast-fed infants died, 2.5 per cent. of the babies fed on modified milk supplied by the Department of Health died.

HAMILTON.

Another city which has adopted measures to reduce infant mortality is Hamilton. Dr. W. F. Langrill, when he was Medical Officer of Health encouraged the movement, though it was not until 1909 that the work was really begun.

The First Effort.

A number of medical men, among whom is Dr. Heurner Mullin, brought the matter to the attention of the Board of Health, but, as usual, "all the appropriations had been made for the year." The Victorian Order Committee then came forward and guaranteed the needed funds, so that the work was actually started in July, 1909. Two depots were opened, one at the City Hospital, and one at the market. A farm was found about three miles from Hamilton, where the herd was tuberculin-tested. The milk was sterilized and bottled at the farm, formulæ were agreed on by the doctors, a nurse was put in charge at the farm and another at the market depot, while the doctor and nurse in charge of the Out Patient Department of the Hospital took charge of the Hospital Clean Milk depot.

A great deal of work, most of it uphill, must be done by somebody in connection with a movement such as this.

The Babies Milk Dispensary Guild.

It was felt that while much had been done, the more modern methods of visiting the mothers and babies in the homes would produce better results. The Victorian Order not being prepared to carry on the work permanently, it was resolved to form a Babies' Milk Dispensary Guild, which has, during the present year, cared

for 140 babies and had only 12 deaths out of that number, 7 of these babies having been on the list for one week or less, and the whole 12 for less than two weeks. An excellent account of this work in Hamilton, including the Visiting Nurse's work, was given by Dr. Mullin before the Ontario Medical Association in 1911.

DO PEOPLE KNOW?

How many of the citizens of Ontario know that we buried nineteen babies under one year old every day in Ontario in 1909, or 6,932, nearly 7,000 in that one year?

The cost of burying a baby is about $50.00. It cost the people of the Province of Ontario about $350,000.00 to bury these dead babies. It would have cost much less than that to keep them alive, and half of them could easily have been kept alive. Dr. Wodehouse, the Medical Health Officer of Fort William, saved 42 babies for $194.98, including medicines for the poor, nurse's salary and car tickets. This is less than $5.00 each. But babies' funerals cost $50.00 each. And then Fort William has the 42 babies. Ontario has them too.

Assets and Liabilities.

A dead baby is a liability till its funeral is paid. But a living baby is an asset and liable to grow into a good Canadian—

What is a Canadian Worth?

And what sum is a good Canadian worth to the country? What was Sir John MacDonald worth? Or Alexander Mackenzie? Or Laura Secord? Or Lord Strathcona? And it is not only the dead babies. Such a death is merciful compared with the life of the poor victims of various ills that our ignorance and carelessness condemn our children to!

What sort of Canadians will live in Canada from 1932 to 1982? Those that are now cradled in their mothers' arms—if they are not clutched from that kind embrace by disease or by death?

Social Incompetence.

Our industries are improving, our commerce is enlarging, our wealth accumulates. But what of the art of living itself. Modern industrial methods have changed all the habits and the surroundings of by far the majority of our people. But though this happened two generations ago, at least in Canada, we have never yet emancipated ourselves from that social ignorance and social incompetence which either cannot see these changes or will not do anything about them. Yet social action is the only possible action. Individual action cannot deal with such a situation. National action, Government action, collective action, municipal action, not individual action can save the baby.

Provincial and Municipal Action.

The Province and city must secure a clean water supply, and a clean milk supply. One father and mother cannot establish a modern system of quick, sanitary and satisfactory garbage disposal. The city must do that. One citizen cannot pay

for paving the street with asphalt. The city can do that and he can pay his share. One citizen cannot compel the careless or covetous landlord to abolish the abominable outside privy and avail himself of the cheap water-carriage lavatory that the excellent system of sewers and water supply in Toronto and most of the other cities renders available.

ONTARIO.

Institution Mortality.

In the House of Commons at Ottawa and almost everywhere else in the Province, the question of infant mortality is beginning to be debated in Ontario, and people are beginning to take thought about it.

Dr. J. B. Black, M.P. for Hants, in Nova Scotia, said from his place on the floor of the House: "I have some figures here which will probably astonish some of us. In the city of Ottawa there were born last year, to the 31st of October, 1910, 2,100 children. Ninety per cent. of these should have lived. Of those born 626 died, or nearly 32 per cent. of all the children born in Ottawa up to that date died." —*Hansard* report.

Institution mortality plays a not inconsiderable part in the high infant death rate of Ottawa. In one institution alone 91 deaths of infants are acknowledged to have taken place from Oct. 1, 1910, to Sept. 30, 1911. Only 65 of these appear on the register kept by the City. Why? And was the 91 the real sum total?

It is to be remembered that the Statutes of Ontario place the responsibility of inspecting institutions on the Medical Health Officer of the municipality where the institution is located.

The Ontario Government during the past year took steps to forbid expressly the separation of any infant from its mother before such infant is of the age of nine months at least.

An Act to Regulate Maternity Boarding Houses and for the Protection of Infant Children.

It is hoped that the revision of this act, now proceeding, may do something to lessen infant mortality. Certain advertisements now appearing in our newspapers should be disallowed. To attract those in a desperate position by advertising that infants are received for adoption often means, it is greatly to be feared, that these same helpless infants are condemned to a slow and cruel death by starvation. Starved because the wretched places often do not know how to keep a child alive, even if they want to, not to mention their ignorance of the well-known rules of child hygiene now being observed all over the world.

District Health Officers.

While all these efforts in different cities and by various organizations help to reduce Infant Mortality. it must be evident that nothing but energetic action on the part of the Provincial authorities will be adequate to cope with such an important provincial matter. The proposal to divide the Province into Sanitary Districts, each to be placed under a Medical Health Officer who would rank high and would have general charge and oversight of the whole District, would be of the greatest

service in this connection. With these Provincial District Health Officers, in direct communication with the Chief Health Officer of Ontario and with the Chief Health Officer as the Central Executive Authority, a campaign could be organized for the Study and Prevention of Infant Mortality in Ontario, the results of which might be expected to lift us from the low and unworthy position we now occupy, tried by the supreme test of sanitary rank, namely, Infant Mortality.

Birth Registration in Manitoba.

Some of the Provinces of the Dominion are beginning to turn their attention to the problem of birth registration. In the following statement, taken from the Official Report of the Registrar General of the Province of Manitoba for 1910, this is shown: "Use every effort in your power to secure the complete birth registration of your district. This is very important, as infant mortality is computed by the ratio of deaths of infants under one year of age to the 1,000 living births. If your birth registration is not complete, you will have a large infant mortality and a misleading statement will be the result.

"The Department will give you every assistance you may require to achieve this end.

"The remuneration received by municipal clerks for the time and trouble they take in securing correct statistics is indeed very scanty, and the public should not lose sight of the fact of the importance of this service. It certainly is deserving of greater consideration, as the work of collecting the records of births, marriages and deaths is one that will be valuable to posterity in a degree proportionate to their correctness."

PRINCE EDWARD ISLAND.

For the year ending May 31, 1910, number of births registered, 1,372; number of deaths registered, 954; number of deaths under 3 years, 142.

NEW BRUNSWICK.

The Deputy Provincial Secretary of the Province of New Brunswick writes:

"In reply I beg to state that our returns are very informal and are not in any way at all complete. In some cases some of the counties of the Province have been left out altogether, but I now give you the number as received by me for that year: Births, 5,794; deaths, 3,409."

NOVA SCOTIA.

The report of Arthur S. Barnstead, Deputy Registrar General, to the Hon. G. H. Murray, Registrar General, for the year ending September 30, 1910, was published in Halifax on March 31, 1911. It shows the infant mortality to be 111 per 1,000.

The report says: "Surely something can be done to mitigate this waste of infant life," and the following table is presented:

In Halifax.....	1	infant	under 1 year	died for every	6 born
Dartmouth...	1	"	"	"	7
Glace Bay...	1	"	"	"	5
Sydney.....	1	"	"	"	6
North Sydney	1	"	"	"	4
Sidney Mines	1	"	"	"	9
Inverness	1	"	"	"	5
Pictou	1	"	"	"	5
Westville....	1	"	"	"	11
New Glasgow	1	"	"	"	9
Stellarton ...	1	"	"	"	7
Windsor	1	"	"	"	7
Amherst.....	1	"	"	"	6
Springhill ...	1	"	"	"	7
Truro.....	1	"	"	"	9
Yarmouth ...	1	"	"	"	5

QUEBEC.

Out of every 1,000 children born in Montreal in 1909, 290 perished in the first year. In the report of Mr. J. W. Bonnier, Recorder of Vital Statistics for the Province of Quebec, the following tables appear:

"I thought it would be interesting to reproduce two lists hereunder which will give to the reader an idea of our infantile mortality, which becomes more considerable each year. It would be very easy, and without many costs to reduce this number of deaths. We pride ourselves of our high birth rate, but of what use, if we lose nearly 50 per cent. of our little ones? Surely on this point our reputation will not be envied by the foreign countries."

Infantile death rate from 0 to 1 year, compared to the total of deaths. (Still born excluded.) — Province of Quebec.

Years. (a)	Total of Deaths.		Out of 100 deaths at all ages, how many from gastro-enteritis from 0 to 2 years.
	At all ages.	0 to 5 years.	
1895.....	31,695	15,237	49.9
1896.....	30,219	14,272	47.2
1897.....	33,268	17,820	53.5
1898.....	30,810	14,132	45.8
1899.....	32,800	15,199	46.3
1900.....	32,778	14,480	44.1
1901.....	30,552	13,335	43.3
1902.....	27,408	10,934	39.8
1903.....	30,876	11,799	38.2
1904.....	30,549	10,526	34.1
1906.....	29,969	11,597	38.6
1908.....	34,247	16,334	47.7
Total.....	317,853	165,685	44.1

PROVINCE OF QUEBEC.

Years. (a)	Total of deaths at all ages.	Deaths from Diarrhœa and Enteritis.		Out of 1000 deaths at all ages, how many from gastro-enteritis from 0 to 2 years.
		More than 2 years.	Less than 2 years.	
1895	31,696	301	3,767	11.8
1896	31,004	115	3,349	10.8
1897	34,287	174	4,221	12.3
1898	31,871	210	4,302	13.1
1899	32,800	215	4,123	12.5
1900	32,778	258	4,359	13.2
1901	30,552	300	4,220	13.8
1902	27,408	206	3,384	12.3
1903	30,876	235	3,758	12.1
1904	30,549	253	4,213	13.7
1906	29,969	210	5,215	17.4
1908	34,247	216	5,716	16.6
Total	378,037	2,693	50,627	13.3

THE SANITARY DISTRICTS IN QUEBEC.

The Government of Quebec has been pleased to give its assent to a proposal, submitted to it by the Provincial Board of Health, to divide the Province into ten sanitary districts, each district to be in charge of a trained sanitarian, to be known as Assistant Inspector, who will represent the Provincial Board of Health and will give his whole time to the Province.

This is a great step in advance, and as the Government has further announced its intention of making these appointments in July, 1912, we may look forward to satisfactory progress in sanitary matters, and especially the reduction of infant mortality in Quebec.

MANITOBA.

For the year ending December 31, 1910, the infant mortality of Manitoba is 149 deaths to 1,000 births. It is however, the opinion of Mr. Rowland Dixon, the Clerk of Statistics, "that in a country like ours where a large number of the districts are sparsely settled and where as yet communication is only partially established the registration of births does not receive the attention which its importance warrants; again in the more populous districts owing to laxity in the administration of this Statute a large number of the Foreign element entirely neglect registration of births and it is only this year that special efforts have been put forth with a view of educating our population as to their duty in this respect, the result is that many children several years of age are being registered and a more complete registration of infants has obtained. The infant mortality rate for this year will, I am confident, be nearly half of what is shown in 1910, and more in accordance with existing conditions."

It will thus be seen that the educational method of reducing infant mortality is being promoted in Manitoba, and no doubt will have the speedy and satisfactory result predicted by Mr. Rowland Dixon. The report continues:

City.	Total Births.	Total Deaths under 1 year.	Infant Mortality.	Percentage.
Winnipeg	3,772	627	166.2	34.7
Brandon	330	89	269.6	29.3
St. Boniface	252	61	242.0	15.6
Portage la Prairie	158	18	114.0	17.1
Rural	6,970	909	131.5	35.2

In general, one death out of every three that occurred during 1910 was that of an infant under one year of age, and nearly one out of every two was that of a child under five years. The foregoing table shows that relative to the total mortality, the number of deaths occurring at those ages is indeed very large and indicates what proportion of the total mortality can be prevented by measures aimed at the prevention of children's diseases.

A consideration of the deaths at the early years of life is of special importance not only because of the large number of deaths that occur during these years, but also because the number of deaths that are entirely preventable is probably greater proportionally for this period than for any other period of life and the causes that produce them can now be easily and successfully combatted. Great progress has been made in the reduction of infant mortality in England and other countries, and this Province, in face of the existing conditions, cannot afford to remain apathetic, but should direct special efforts towards the prevention of infant mortality. It is extremely desirable for such an important purpose that reliable statistics of infant mortality should be available.

The correct statement of "infant mortality," which term denotes the number of deaths of infants under one year of age, per thousand living births, depends on the accurate registration of births. This, it has been shown conclusively, under the heading of births, unfortunately is not being done at the present time in Manitoba.

This report for 1910 was presented to J. J. Golden, Inspector of Vital Statistics on March 6, 1911, and by him transmitted to the Hon. R. P. Roblin, Minister of Agriculture and Immigration, on the same day.

SASKATCHEWAN.

The infant mortality for the Province of Saskatchewan in 1910 was 129.49 to 1,000 births.

The Vital Statistics Report is part of the Report of the Hon. Minister of Agriculture.

ALBERTA.

Total number of birth registrations in 1909 is 6,897.

Total number of death registrations in 1909 is 2,662.

No information *re* the age at death is published, so that the infant mortality cannot be computed from the information supplied.

BRITISH COLUMBIA.

For the year ended December 31, 1910, number of registrations of births, 5,005; number of registrations of deaths, 3,221. This number of deaths includes all ages. (Persons who are Indians are not included.)

GREAT BRITAIN AND IRELAND.

The following tables, which are part of Dr. Arthur Newsholme's Report to the Local Government Board, show that the first ten years of the twentieth century the general death rate declined 20 per cent. but the infant death rate declined 30 per cent.

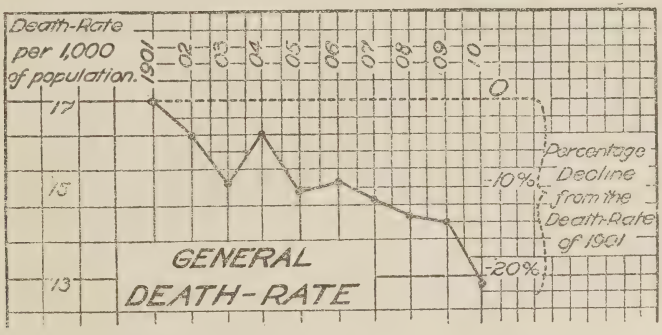

FIG. 1.

Annual Death-rate in England and Wales, 1901-10.*

Fig. 2 sets out the course of infant mortality during the last ten years. It was 30 per cent. lower in 1910 than in 1901:

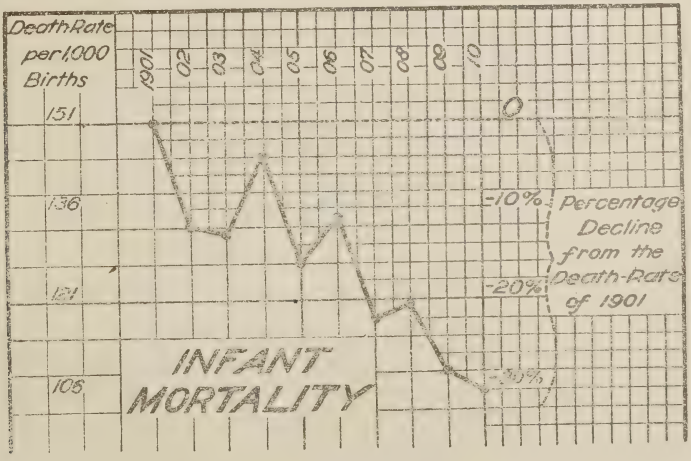

FIG. 2.

Annual Infant Mortality per 1,000 *Births in England and Wales*, 1901-10.*

"There has been a remarkable fall in the infantile death-rate; and, even after full allowance has been made for the series of years during which climatic conditions have been favorable to infant life, there can be no reasonable doubt that much of the reduction already secured has been caused by that "concentration" on the mother and child which has been a striking feature of the last few years. The amount of saving of life may be illustrated by a comparison of the average experience of 1896-1900 with that of 1910. In the latter year 897,100 births, and 94,828 deaths of infants under one year were registered in England and Wales. Had the experience of 1896-1900 held good, there would have been 45,120 more deaths of infants in 1910 than actually occurred.

"In a supplement to the annual report of your Medical Officer for 1909-10 his special report on Infant and Child Mortality was published (Cd. 5263); and in his annual report a more general review of the subject was given. In these reports the subject was dealt with on the basis of the statistics of the administrative counties of England and Wales. In a report, supplementary to this volume, which will be prepared as soon as practicable, the infant mortality in the large towns of England and Wales will be analysed. It will be convenient, therefore, to defer further remarks on infant mortality until the issue of the special report just mentioned."

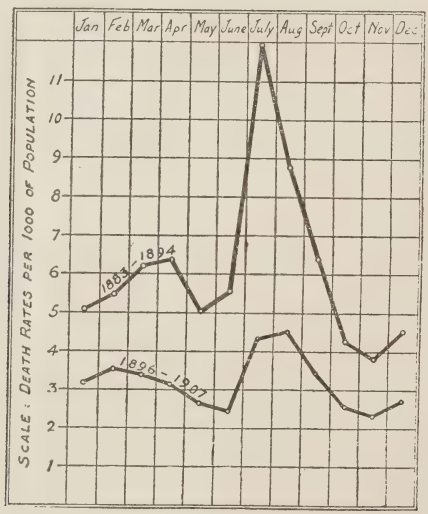

FIG. 3.

Average Monthly Death Rates of the two periods, Children under One Year of Age.

IRELAND.

The Women's National Health Association of Ireland, under the presidency of the Countess of Aberdeen, devotes much attention to the problem of infant mortality, especially in Dublin, where, for the weeks ending July 22, July 29, and August 5th, the number of infants who died was 31, 46 and 53 respectively. The city is divided into eight Sanitary Districts and the Association has placed a nurse in each district to visit the mothers and assist them in every way under the direction of the dispensary physician. While the rate of infant mortality in Ire-

land, as a whole, is lower than in England and Wales, and lower than in Scotland, the rate in the Irish towns is greater. The rate in Dublin was 142 per 1,000 births, and in Belfast 143 per 1,000 births.

The rate of infant mortality in the three countries for 1909 stands as follows:
Scotland 121 per 1,000 births.
England and Wales, 109 per 1,000 births
Ireland 92 per 1,000 births.

(The Registrar-General for Ireland in the *Lancet*.)

Greater Birmingham.

Greater Birmingham, which now has an area of 68 square miles, and a population of about 895,000 can point to a reduction in the infant mortality during the last 20 years. It has dropped from 182 per 1,000 to 130 per 1,000 and it is hoped that the work of women as Sanitary Inspectors will reduce it still farther.

Climate Conditions.

It is very well known that a hot and dry summer is much more fatal to little babies than a cool, wet summer. The summer of the Coronation year in England was a very remarkable one. The rainfall was about 3½ inches below the average. The sunshine was 284 hours in excess, and the temperature, every day but three, from the last week in June to the middle of September reached 70 degrees or more in the shade. And again the infant mortality rate proved itself a "sensitive index."

Deaths from Infant Diarrhoea in England and Wales.

1910—July, 58; August, 239; September, 342.
1911—July, 276; August, 2,666; September, 1,369.

Infant Mortality in London.

Mr. Harris, the Medical Health Officer of Islington, addressed to the Health Committee a special report on infant mortality, pointing out that the infant death rate for Islington was over 20 per cent.—407 deaths under one year old out of 1989 births, and that in Barnsbury it reached about 30 per cent., 297 deaths under one year to 1,000 deaths.

The Mother Did Not Know.

A special investigation was made of 201 deaths under one year. It was found again that the baby nursed at the mother's breast was almost safe. 182 of the 201 babies were fed in some other way, only 19 of the dead babies were nursed by the mother. Only 45 of the 201 mothers worked away from home, and 154 of them were strong and well. These 201 mothers, as Mr. Harris says, are the ones to be reached by instruction. Probably, nay almost certainly, all of the 182 could nurse the baby and they would if they knew it meant the baby's life, as it did for these 182 babies.

He Asked for Bread and They Gave Him a Stone.

Mr. Harris asked for an appropriation for Health Visitors, and the Health Committee of the Borough Council gave him an appropriation to print leaflets on the dangers of artificial feeding of infants. He asked for bread and they gave him a stone.

Sanitation.

Is infant mortality really dependent on sanitation and food supply?

If any one ever doubted it, we now have a proof thrust into our hands which no man may gainsay. No city in the world has a better or more modern and economical sanitary service than Liverpool. Take the disposal of refuse. There is a great municipal destructor on Charles St., where there is a wharf. Six hundred tons of refuse are brought here every day. This refuse is so well managed that instead of being worthless or a nuisance, it brings in an income of about $15,000.00 per year, or say $45.00 a day, by dint of sorting, *e.g.*, oyster shells are sorted out and ground up for hens to make new egg shells of. Scraps of metal are compressed into bales of 100 pounds each and easily sold. Clinkers are ground, mixed with cement and made into artificial flag stones, the best on the market, at the rate of 200 yards of paving stone per day for the clinkers of Liverpool, and the destructor supplies heat for four boilers, which supply power for the electricity needed in the city.

The Effect of the Strike.

All this ended when the strike was declared. The city not only lost the benefit of all these activities, lost in cash $45.00 per day, but as only 100 tons instead of 600 tons reached the destructor, then refuse, garbage and filth of all sorts accumulated in the streets and lanes of Liverpool at the rate of 500 tons every 24 hours.

From 1906 to 1910, the average number of deaths from infant diarrhœa for the four weeks of August were respectively:

August.		1911.
1st week.....	23	81
2nd "	34	132
3rd "	52	159
4th "	63	140

The intensely hot weather did make the situation worse, but the evil of the strike was worse still. Even the work of Sanitary Inspectors was stopped and the work of the lady Inspectors, so valuable, was also stopped completely by the strike.

Dr. E. W. Hope, the Medical Health Officer of Liverpool, who is known all over the world as a Sanitary Reformer, has prepared a special report on this subject, from which the above is taken.

A Great Improvement.

Terrible as the increase in infant mortality caused by a hot and dry summer is, we yet can see that this increase is not as great as it would formerly have been.

Dr. Symons, M. O. H. of Bath, points out that in Bath infant mortality was as follows for July, August and September only, from 1896 to 1911:

1896—1900	141
1901—1905	91
1906—1911	86

A great improvement in spite of the unfavorable season.

The Government Letter.

During the summer of 1911 a step of much significance was taken by the Local Government Board. On August 18th, 1911, a letter intimating the concern with which the Government was watching the daily rise in infant mortality, was sent from Whitehall to every sanitary authority in England and Wales, through the Town Clerk or the clerk to the District Council. The subject of the letter was

Prevalence of Epidemic Diarrhoea Amongst Children.

"Firstly, it is important that exact advice should be given as to the feeding and management of children, and more generally as to preventing the exposure of their food to contamination from decomposing organic matter. The distribution of clearly worded leaflets is useful in this connection; but even more important are personal visits and the offer of practical advice to the mothers of babies born within the last twelve months. Exact and simple instructions are most likely to be followed if given during a period of special danger. In districts and towns in which the Notification of Births Act has been adopted, the records obtained under that Act will give valuable information in selecting the homes to which visits are now most urgently required.

Secondly, the full value of the personal instructions indicated above cannot be realised unless vigorous efforts are made to prevent the accumulation in or in the vicinity of the house of decomposing animal and vegetable matter. It is not necessary to do more than mention the importance of efficient scavenging, of frequent and, if practicable, daily removal of house and stable refuse, of domestic cleanliness, and of keeping all food properly protected. The Council may consider it advisable during the next few weeks to divert the sanitary inspectors from less urgent work, and to instruct them to make rapid visits with a view to securing efficient sanitation, especially in and about the houses of the working classes.

Thirdly, it is important that the Council should promptly ascertain in which parts of their district diarrhœa is especially prevalent, and should devote close attention to street and court scavenging and to the removal of stable and domestic refuse in these areas. Without waiting for the weekly death returns, efforts should be made to obtain information of cases of diarrhœa from health visitors and others who make domestic visits; and to impress upon parents the importance of immediate treatment of infantile diarrhœa. Apart from the medical notification of cases of epidemic diarrhœa in children, the visits of health visitors can be utilised for impressing upon parents the seriousness of diarrhœa amongst young children and the desirability of information being given to the Medical Officer of Health should a case of diarrhœa occur.

"The Board will be glad if the Medical Officer of Health, in his annual report dealing with the current year, will set out the course of action adopted in the district to prevent diarrhœa and child mortality generally, in the special circumstances of the present year."

Good Business.

This is what is popularly called "good business," and the prevailing feeling among us (perhaps not entirely without foundation) that our business methods are somewhat more modern and adaptable than those followed in England could not find a better justification than a swift application of modern business sanitary methods to cut our infant mortality rate (of four babies every day in Toronto, for example) in two and then cut that rate in two again. Two babies a day is enough for Toronto to bury, and when we bury only two a day then we shall feel one baby a day is all we can afford to bury.

THE DOMINION OF NEW ZEALAND AND THE COMMONWEALTH OF AUSTRALIA.

Our sister Dominions beyond the seas lead the world in low infant mortality. In New Zealand and Australia the terrible figures now recorded in Canada are apparently unknown.

The World's Record.

South Australia and New Zealand both show a rate of 71 deaths under one year of age per 1,000 births. West Australia in 1910 had an infant mortality of 78 and Tasmania shows, in the last report of the Chief Health Officer, Dr. J. S. Purdy, a rate of 65 per 1,000 births.

The following figures show that steady progress has been made towards this low rate of infant mortality:

Western Australia	97.7
New South Wales	88.6
Queensland	77.2
Victoria	72.6
Tasmania	83.0
New Zealand	88.9

(Quoted by Dr. Helen Mayo for 1907.)

How To Do It.

The Society for the Health of Women and Children in New Zealand has helped to do this. It was founded in 1907 "to help the mothers and save the babies," and they do help the mothers and save the babies. There are now branches of the Society all over the Dominion, but only one Central Home, the Karitane Hospital, at Dunedin, where the nurses are trained. The first branch was founded here in 1907 by Dr. Truby King, and the Karitane Hospital was opened by the Society in Dr. Truby King's home in 1908 because there was no provision in the General Hospital for sick children under two years of age, except for surgical cases. Mrs. King is the President of the Society.

The Karitane Home deals only with cases of malnutrition, improper feeding, infant diarrhoea, etc. It began in a cottage of seven rooms with three nurses. It now has a matron and eight nurses. In 1910 Mr. Wolf Harris bought the Home and presented it to the Society. The babies of the poor are taken and the babies of the rich. The former are often paid for (5s. a week) by the Charitable Aid Board. The Government give an annual grant of £500. At the Karitane Home a certificated General Hospital nurse must take three months' training and a maternity nurse six months' training before applying for an appointment as a "Plunket Nurse." There are twelve such nurses in New Zealand employed by the various branches of the Society.

A Canadian in New Zealand.

Plunket nurses are called after Lady Plunket, wife of the Governor of New Zealand, and youngest daughter of the late Marquis of Dufferin and Ava. She is a Canadian, as she was born at Ottawa when Lord Dufferin was Governor-General of Canada. It was she and Lord Plunket who prepared and published a leaflet to help this Society, which to quote Lady Plunket's own words was established, "For the sake of women and children, for the advancement of the Dominion, and for the honour of the Empire."

Nurses.

Another good thing done at the Karitane Home is the training of children's nurses. Girls without any previous training in nursing are trained for twelve months, and then on passing an examination are given a certificate as baby's nurse.

Immigration.

It may, of course, be said that in the Commonwealth of Australia and the Dominion of New Zealand there is not the large immigration that now yearly comes to Canada and probably influences our infant mortality adversely. Perhaps, but we know nothing accurately about it. How do we know that the immigrant's baby dies oftenest? The whole subject needs thorough investigation.

State Children.

If one seeks to know why the infant mortality in Australia and New Zealand is so low the most obvious answer is the attitude of the Government. It acknowledges its responsibility for these children. Children not otherwise provided for are called State children. And this name means that the State sees that they have a home. Nor does the State refuse to acknowledge them until they are of an age when adoption is easy. For one person who is willing to take a child under one year old into the home there are many who are willing to take a child of four or five. In Australia as well as in Hungary a mother and a home is found for the child by the State and the real relatives are obliged to pay for its maintenance. The foster-mother is thus repaid for the service she does to the State, and the State causes the relatives to make this payment, or if this is impossible, then the State makes the payment for State children.

Institutions.

It has been shown again and again, and cannot be emphasized too much, that the institution for a baby, is a fatal failure compared with a home. We should set our faces against institutions in Canada, except for the very few Canadians, insane, feeble-minded, chronic criminals, etc., who cannot make good outside an institution.

Who Need an Institution.

For the patient, the hospital is the place. It gives him his best chance to fight for his life and to win. Health returns and the first use the patient should make of it is to leave the Hospital.

To the mentally diseased, the psychiatric ward, the Psychiatric Hospital is more imperative still. Almost always one may say that the patient's chance of recovery is seriously risked by keeping him at home. For the feeble-minded and the habitual criminal, society must provide an institution in self-defence.

Not for the Baby.

But for the baby the institution is an impossible solution and the baby simply proves it by vanishing out of life. Hungary and some of our sister Australian Provinces have found the solution—the same that Egyptian princess found for the baby floating on the Nile in an ark of bulrushes.

I Will Give Thee Thy Wages.

These States call destitute or deserted infants their children—State children, and they choose foster-mothers as carefully as Miriam selected the Hebrew woman whom she recommended to Pharaoh's daughter and they say to them what Pharaoh's daughter said: "Take this child away and nurse it for me, and I will give thee thy wages."

The Illegitimate Child.

One class of infants adds an awful burden to the infant mortality. The child that has no father. Repudiated and disowned by the man who is responsible for its existence, it begins that existence under a handicap so overwhelming that it is next to unknown for such a child to obtain a footing in the community. Surely the fact that such a child is disowned should justify the community in going one step farther and ordering that since that dishonorable fact is the only one known about the innocent child, the iniquity and desertion of the father should entitle the child to the protection of the State. To "rescue" the woman at the expense of the child or with little thought or concern for the poor child, is a matter of doubtful morality.

Death by Starvation.

Many of these children are strong and healthy. But their death rate is almost twice as great as the death rate of legitimate children. That death is often simply murder, and a slow and cruel murder of a helpless victim. It is time we faced and thought out this matter of what to do about the illegitimate child.

How many illegitimate children are there in that ghastly death roll of 1,727 in Toronto? We do not know. We have no information on that point in the report of the Registrar-General for 1909, nor any about the 8,768 infants who died in Ontario in 1909 under one year old.

A Slow Form of Murder.

Dr. Wodehouse, M. O. H. of Fort William, says: "The mortality and conditions surrounding illegitimate babies of our city are appalling—wilfully wrong feeding apparently being a slow form of murder."

How Old are the Mothers?

The age of protection of girls, sometimes called the age of consent, should be raised. And there is great need to know the age of these unhappy mothers. It was stated at a conference in Australia that in one of the Australian Colonies where the matter had been investigated in 1906 it was found that 200 of these mothers were under 16 years of age and 20 were under 14 years.

Public Opinion.

Signs are not wanting that down far down below the surface of national life and thought there is a rising conviction that all is not well with the nation who can give no better account of its civilization and stewardship than that furnished by our infant mortality returns in Great Britain, the United States and Canada. Take up any newspaper, magazine or review and you will find some such expression on its pages as there is in *The Spectator* of November 11th, 1911, written by Miss M. Loane from her unsurpassed and shrewd knowledge of the very class which must be reached to improve infant mortality. Miss Loane remarks that we are all agreed as to the value of child life and from a national as well as a humanitarian standpoint are determined to preserve it.

Who is Responsible?

The question is, who is to preserve the child? Manifestly the parents and the State both have responsibility for this. Yet this is a world not yet very efficient in its organization and "the State may (and not infrequently does) materialize as a man clerk presenting leaflets to an illiterate woman, or as a Poor Law Guardian of rather forbidding exterior perfunctorily questioning boarded-out children twice a year, or a Sanitary Inspector with a district so large and duties so varied that a conscientious person would speedily be driven to his grave or a lunatic asylum. The parents may be a half-witted woman and a street-corner man, or (more probably) a factory hand and a casual labourer, they may be represented by a penniless, friendless girl, or, far worse, by her elder sister, who recalls with grim satisfaction that the last didn't trouble her long, not after she left the house."

Maternal Nursing.

Miss Loane, in common with every one who is capable of giving intelligent thought to the subject, speaks of the all-importance to the child of maternal nursing, and also adds that when the baby is weaned, between 8 or 10 months of age, or in the very few cases where maternal nursing is truly impossible we may

be fairly well satisfied if the child is fed solely on fresh milk served in an absolutely clean bottle and raised to blood heat by the addition of a little boiling water, and if the meals are given at regular intervals. "The teacher must be careful to speak as if convinced that the mother wishes to do her utmost for the child, and as if it were quite possible to be a most respectable and intelligent woman and yet be in need of a little instruction as to the artificial feeding of infants."

Blame the Mother.

The popular fashion of the day is to "come down on" the mother, to say that she "does not know her business," should be ashamed to look a respectable tabby cat in the face, etc., etc., etc.

The average mother is a heroine. The soldier who goes to the battlefield, whether he returns again or not, has shown his willingness to lay down his life and the mother does the same. But what avails her sacrifice if the light of that life which she is willing to give her own life for is only to flicker for a few months and then go out forever? "To bear—to rear—and then to lose." And is it better or worse when instead of swift and merciful death we have the long struggle of the severely handicapped for a bare existence? There is no handicap like bad health.

Manufacturing Unfit Citizens.

When nearly 7,000 babies were put under the sod in Ontario in 1909 the disaster did not end there. It has now been proved that where the infant death rate is high the general death rate is high too. And the same want of proper care and want of proper feeding and general unsanitary conditions which slew the seven thousand babies in Ontario in 1909 cause in the survivors a condition of unfitness and inability to meet the demands of able-bodied citizenship which costs the community dear and has caused in older countries a serious deterioration of the national physique.

The Rest of the Family.

It may be mentioned in passing that all the members of the family, and indeed every citizen of a civilized country, should know something about a baby. As Miss Loane says, "time bestowed upon the father's instruction is rarely wasted, especially if devoted to general warnings and recommendations as to the ventilation of the house and the proper condition of yard and drainage." "The grandmother should be specially warned as to the danger of soothing syrups and teething powders."

Give the Mother a Chance.

Before we can be righteously indignant with the mother for not knowing her business, we should see that some chance is given her to learn that business. How, when and where are the mothers of the babies to be born in 1925 to learn their business? They should learn it both in the home and in the school. The opportunity may not occur in the home. It should be given in the school. Girls of 11 to 14 years of age may and do learn an infinite deal about the home and the baby whenever they get the chance in school. Residential schools, elementary schools and other schools for girls are fast introducing lessons on home management.

These are very popular with the girls if they are at all well conducted and if the teacher is really interested in them. Miss Hitching, organizer and inspector of Home Management to the Derby County Council says:

To Run a House.

"To run a house" smoothly and well is an achievement of which any woman, even the highest and most cultured, may well be proud. No work is more responsible for weal or woe; none is harder or more engrossing; none needs more forethought and a greater amount of common sense; none more careful training. Far too long has it been taken for granted that, to a woman, the proper management of a home and an infant comes by instinct. In very many homes husband and child are made the unwilling victims of various experiments, that spoil the digestion and the temper of the one, and not infrequently end the life of the other. It is a splendid thing for the nation, that on all sides people are beginning to realize that no longer must the education of the future wife and mother be left to chance; that to allow girls to leave our schools able to do the hundred-and-one things that *don't* matter, but totally unable to do the one thing that *does*, is a great and costly mistake.

Lessons for the Elder Girls.

"Standard VI. take up the important subject of Infant Management—the washing, dressing, feeding, and 'minding.' A life-size baby-doll is used for practice, but a real baby is brought into school, and washed and dressed in front of the girls. Practice is given in the mixing of food for the various ages, when mother's milk is out of the question. The lessons are given in a most *matter-of-fact* way, and in an *intensely earnest* manner, which never fails to impress and set the 'tone.' With a nearly twenty years' experience of teaching home management, I would say that no part of it is more important than infant management. We are so in the habit of taking it for granted that every girl has the opportunity of nursing a baby *at home!* In a class of seventeen Standard VII. girls, only three had a baby at home under 2 years of age! I tested the other classes with similar results.

"If taught in the right way the lessons are immensely enjoyed. I would like readers of *The Child* to see the intensely earnest look in the girls' eyes as they tell visitors that 'a baby has a *right* to its mother's milk—that cows' milk was meant for calves, not for babies!"—*The Child.*

Little Mothers in the United States.

American cities are introducing the same thing. New York has its "Little Mothers' Leagues," and Chicago its "Little Mothers' Classes" in the schools.

In New York the Department of Health has been able, by an educational campaign, to reduce infant mortality. The corps of physicians and nurses who visited from house to house and took part in the various activities for infant welfare found that a great deal could be done to teach the older girls, and consequently in 1910 Dr. S. Josephine Baker, the head of the Division of Child Hygiene in the Department of Health organized the older girls at home and at school, into Little Mothers' Leagues. In May and June, 1911, the physicians and nurses gave lectures and demonstrations at schools attended by girls of twelve years of age and over, and 183 Little Mothers' Leagues were organized to care for the babies.

The Sword of Herod. Ignorance.

If the sword of Herod is ignorance, then those who fight for the baby's life must be armed with the sword of knowledge. Certain very simple and all-important matters are really not adequately known. Even nursing by the mother is thought by some people to admit of argument, perhaps because every newspaper, journal and magazine, the bill-board, the druggist's window, and the conversation of the average mother's acquaintances teems with allusions to the miraculous effect of somebody's food for infants at so many cents a tin.

The First Day Settles the Baby's Fate.

The fate of the baby is frequently settled in the first twenty-four hours of its life. The mother herself and the nurse caring for her, should know that the baby should be placed at the mother's breast and so taught to nurse just as soon after the birth as the mother has slept and rested and been made comfortable (including giving her a cup of warm food). Now, if the baby is placed at the breast and taught how to nurse, in all human probability, it will escape the ills which carried off, in this Province in 1909, 132 per thousand of our children under one year old. In all but very exceptional cases the baby needs no teaching.

What the Baby Knows.

Two things that the new born almost invariably knows are how to grasp with its fingers and how to suck with its lips. Present anything of a suitable size to the tiny hand or to the tiny mouth and your part is done. The baby does the rest. But if this is not done on the first day of life when it is easy, it will be found difficult on the second day and almost impossible later on.

Hence the absolute and indeed over-whelming necessity of having births certified within 24 hours so that the greatest chance of health and welfare may not be missed for the baby.

How To Do It.

As soon as the child begins to nurse the quantity of the milk increases from day to day for several days. A liberal quantity of good plain food and fresh air for the mother will increase the milk and the quality of the milk. One or two cups of good milk half an hour before nursing also helps.

Tell Them All.

Hence the indispensable importance of educating not only the mothers, but the fathers and the grandmothers, and the "Little Mothers" and the acquaintances and the whole community in this fundamental fact about the baby.

It can be Done.

Because the nation depends on the babies for its continuance, therefore, no good citizen can afford to neglect child welfare. The mother will do her part. Every effort is now being made by the manufacturer of infant foods, and the sellers of infant foods to get the mother to think that these certified foods are the best for the baby. Just the moment that the mother finds out that the little baby's life is

in danger every minute as long as he is a little baby unless she nurses him, just that minute she will make up her mind to nurse him if she can. Even if the mother has not nursed the last baby and is afraid she cannot nurse the next baby, that does not mean *that she cannot nurse the baby.* It only means that she *thinks* she cannot. Nature has made the provision. The mother with help and skilled care and an understanding person to handle the situation will nurse the next baby. Nursing or not nursing is no more an unalterable and irrevocable matter than any other mode of feeding is.

Watch the Baby.

The next critical time in the history of the baby is the change from maternal nursing to some other plan of feeding. Some of the modern plans of preventing infant mortality and the best skill of the community should be utilized now for the baby. Our wealthy citizens have fewer children, and infant mortality among them is very small. The babies of the rich are cared for by the best physician available assisted by a thoroughly trained maternity nurse, and few of them die. Quite right. But nearly all our children come to the middle class home and to the homes of the wage-workers, and many of them died in 1909. We must change that death-rate. If necessary these babies should be seen every week, as they are at infant consultations or by the nurse in charge of infant welfare for the Department of Health. If neither of these plans is in working order yet, then surely some sensible volunteer worker could pay two visits to the baby, at three months and six months of age, to weigh it and to see how it is doing and to help to keep it well. Sometimes, but not often, babies at that age may begin to need a little additional food, and this needs skilled advice. It is no small matter to carry a baby safely over this period.

The Baby's Food.

Then between the 8th and 10th month the baby should be seen several times and care taken to see that it starts well on the new plan of feeding necessary then. The truth is that the successful care of a baby depends on a world of small details, often repeated, and needing exact attention and real interest. In this it is like everything else that is worth doing. Besides the fundamental fact that maternal nursing is all-important at first there are many minor things. When the baby gets to about nine months of age, the milk supply gets to be all-important.

Keep Everything Clean.

Clean cow's milk, diluted and sweetened and kept in carefully covered bottles and kept cold must gradually replace maternal nursing. Summer is the time when infant diarrhœa is so fatal, and the poison reaches the baby through the dust and dirt that get into its milk, through the dirty rubber nipple, through the "comfort" that falls on the floor and is replaced in its mouth, through the deadly long rubber tube to the feeding-bottle that gives the bacteria their chance to multiply exceedingly and infect the milk.

A home-made refrigerator for the baby's milk costing a few cents (see p. 42) may be, and often is, the means of saving the baby's life.

A Cradle.

Another important detail in the care of the baby is its cradle. To the wage earner this need not be an expensive luxury. A good cradle may be made from a banana-crate at a cost of about ten cents. The father will do the carpentering necessary, the mother will make a soft mattress of chaff or sawdust. Over this put a piece of packing paper (tarred or varnished) or a piece of waterproof and the bed is ready for the sheets and blankets.

Keep the Baby Warm.

Few people realize how necessary it is to keep the baby's hands and feet warm. The baby has not yet sufficient vitality to keep itself warm as the grown person can. It must be warmed and kept warm, and the danger of burning a baby with a hot brick or a hot water bottle must not be lost sight of. And the wise nurse or volunteer worker to reduce infant mortality must remember that these precepts must be gone over and practically and acceptably put to the mother over and over again. In this work repetition makes certain.

The Expectant Mother.

We can never be too early in our efforts to save the baby. We are almost always too late, as Miss Loane says:

"Only too often no help or advice has been given to even the most ignorant mother until she has two children in their graves, one far on its way thither, and another deformed from malnutrition, and probably her own health ruined in addition."

Five or six months before the advent of the baby the mother should be visited by the nurse or other expert, her own health and comfort, especially her food, (the mother is self-denying) and her environment should be considered, first from the standpoint of the responsibility and ability of the husband and father and family and then from the standpoint of the community of which the coming child will be a member.

Get Ready.

Everything should be done to make the utmost of the family's private resources to prepare the baby's little outfit and to provide the necessary medical care and nursing. The housework and the care of the family for at least ten days or two weeks must be thought of. The great kindness of good neighbours, friends or relatives, who will come and take charge of things till the mother gets somewhat strong again must be sought for. Sometimes a Maternity Hospital is the place, but not always. The very presence of the mother in the house means so much.

Look After the Mother.

More and more the advantage and necessity of care for the expectant mother is being realized.

The New York Milk Committee, to whom no small share of the reduction in infant mortality in that city is to be attributed, determined in October, 1911, when the summer campaign ended to turn its attention to the prevention of infant deaths due to congenital troubles, which cause 17 per cent. of all infant deaths.

The committee is giving attention to 1,000 expectant mothers to enable them, if possible, to bring into the world children strong enough to meet the stress of life. An arrangement will be made with the Russell Sage Foundation by which a special nurse will be detailed for this work. In addition to medical care and hygienic precautions, help will be provided if the mother is overworked.

The Insurance Bill.

The much debated Insurance Bill in England contains a provision of 30s. for a Maternity Benefit. As Ald. Broadbent says, in the *Pall Mall Gazette*: "This is for the baby. First of all there must be absolute security for safety in birth; that is to say, the mother should have skilled medical attendance. But the life is not yet independent, because the mother has the key to the baby's food and the most part of the maternity benefit must be conditioned on the mother feeding the baby. With these two essentials adequately secured, probably the 30s. will be exhausted."

Legislation for the Mother.

The Maternity Benefit of the National Insurance Bill may be taken to mean that some sense of the importance of the care of the mother-to-be and the mother-that-is has at last been expressed in legislative enactment. But it does not go very far. The last two months before the baby's birth are of special importance and the mother should be cared for during that time. It is the right of the child to be nursed at the mother's breast and it is the right of the mother to nurse her child.

Economic Insanity.

It is ill for the nation that allows commercialism, or covetousness, or cruelty to do what Job says the wicked do—"They pluck the fatherless from the breast." It is the fatherless who are most in danger of this loss. The mother has to earn for them. This is economic folly—yes, more—it is economic insanity. What man in his right mind would pluck the baby from the mother's breast? It is a tragedy that the mother for any reason should be taken from the work of caring for little children, work indispensable for the welfare of the State, work that no one else can really do but the mother. Some way should be found to give the mother enough to live on at least while she has a baby to care for.

The Young Physicians.

It is a sign of the times and a cheering one, that our physicians, and especially the young physicians, are beginning to devote more attention to the question of nursing by the mother. At the 1911 meeting of the Ontario Medical Association Dr. George Strathy, in a valuable paper on the "Difficulties in Breast-feeding," points out how frequently nursing by the mother is discontiued on account of some slight digestive disturbance that might easily be remedied. If the baby is not thriving, not gaining in weight, then find out by the test-feed, *i.e.* (weighing the baby before and after the nursing), how much milk the child is really getting. If the quantity (usually 6 oz.) is sufficient, then is the quality good? Is the mother tired, over-worked, run-down, underfed? If so, then less work, a mid-day rest, better food will set things right both for mother and baby.

Sometimes on the other hand, the child's weight is good, but it is distressed by colic. This is most frequently caused by, (1) Irregular Feeding. Remedy, Feed by the clock. (2) By stale milk. Sometimes the breast is not completely emptied at one feeding and this milk, remaining in the breast too long is distasteful to the baby and causes colic. Remedy, The breast should be completely emptied after nursing, by the breast pump if necessary. (3) The baby gets too much milk. A strong baby will sometimes get six ounces in five minutes and if allowed to go on for the usual fifteen minutes gets the stomach dilated and consequently suffers. Remedy, see that the child does not get too much milk. (4) Lack of digestive juices. Remedy, the doctor will prescribe some medicine to help this condition.

The Test Feed.

Another important paper published in 1911 was that by Dr. Eric Pritchard in the *Lancet*, on Breast Feeding; The Value of the Test-Feed.

By the test-feed is meant the actual amount of milk which the infant gets at one nursing, ascertained by weighing it before and after. This is found to vary from two ounces to eight ounces. So many observations were made by Dr. Pritchard and his colleagues in three institutions and in private cases—(in one institution alone 9,435 observations were made) and so carefully is everything recorded, such as age, number of feedings in the 24 hours, total number of ounces of milk got in the 24 hours, etc., etc., etc., that these researches will probably become classic. The cases were finally arranged in three groups:

(1) Those obtaining less than 10 oz. milk in 24 hours.

(2) Those obtaining from 10 oz. to 20 oz. milk in 24 hours.

(3) Those obtaining over 20 oz. milk in 24 hours.

Just as one finds in grown people, it is not the baby who takes the most food that thrives best.

The Starved Baby.

Any doctor or nurse or medical student who has attended the out patient department of a Children's Hospital, or even of a General Hospital, knows the story of the starved baby only too well. Here it is as Dr. E. H. R. Harris writes it in the *British Journal of Children's Diseases*:

Panic.

"The prevailing state of mind of the mother who sees that her bottle-fed baby is not thriving appears to border on panic. She rushes wildly from one food to another, and the unfortunate child is tried for two or three days on a patent mixture recommended by a neighbour, only to have it changed—at the behest of another neighbour or the local chemist—for another certain success. Meanwhile the infant wastes with more or less rapidity, and the maddened intestinal tract is driven to revolt and to reject everything 'fore and aft.'

"Case 1.—F.D—, full-time male, aged 6½ months. Breast to four months. Weight then was 21 lb. Since then has been fed on cow's milk and barley water, and for the last *month* on barley-water only. Present weight, 14 lb. 4 oz. Diarrhœa and vomiting. Boat bottle. Father, dock labourer; mother does outside housework.

"Case 4.—J. G—, full-time male, aged 4 months; 7 lb. 5 oz. at birth. First child, born in lying-in hospital; breast-fed for one month, at which time mother left hospital and gave up breast-feeding, although she had plenty of milk. Father died in epileptic fit and mother has to work. Since breast has had cow's milk and barley-water and then a patent food. Wasting; present weight 7 lb. 10 oz. Boat bottle. The child had gained 5 oz. in weight in the four months of its existence."

Could anything be plainer than that if the maternal nursing had not been given up the baby would have continued to thrive. Think of feeding a human being on barley water for *a month!*

Think a Little.

The more we know about the nursing mother and the more she knows about nursing, the better for Ontario. It is not so easy as it looks. As Dr. E. V. Davis says, in the *Weekly Bulletin* of the Chicago Department of Health:

In Chicago last summer fifteen bottle-fed babies died to every one that was breast fed. Mothers should be made to appreciate this fact when bottle feeding is contemplated.

You can dry up a mother's milk by putting the baby to her breast only at long intervals, say morning and evening, or only at night. Such habits will spoil the best wet nurse ever created.

You can check a mother's milk by constant or too many night feedings or by disturbing the woman's hours of sleep in any other way.

You can spoil the best breast milk in the world by feeding the woman too rich food, giving her alcoholic tonics and checking normal exercise.

You can "upset" the baby by putting it to the breast too frequently, loading a half-empty stomach with a fresh meal. Vomiting, colic, green stools and diarrhœa are some of the results.

You can get the best results by first knowing what the wet nurse yields to her baby by a system of weighing the child before and after nursing. Every baby doctor should keep suitable scales to rent or lend for this purpose until he is satisfied on the matter.

The interval between nursings can best be regulated when you know how much milk the baby gets in twenty-four hours. An ordinary baby will thrive best on not more than seven meals in twenty-four hours during the first three months of life, and often will do as well or better on six feedings. An effort should be made early to cut down night feedings, as it favours the welfare of both mother and child.

When the yield of breast milk is scanty and the child not gaining, give an ounce or two of artificial food just after its nursing, rather than omit a breast feeding altogether, if the child is under six months or even older, and if the time be midsummer, as such a method keeps the breasts up to their best yielding capacity. The old way of substituting a bottle for one or two feedings only checks the yield of milk all the more.

Nonsense.

Another favorite fiction is that "the milk dried up on the fourth day," or that the mother "lost the milk on the fourth day." The reason that people think the milk dries up on the fourth day is because the breast becomes soft and small. Why? Because the gland cells about the fourth day are changed into the "colo-

strum," which secretion is then drawn from the breast by the baby and is not replaced for perhaps a few hours by the milk which now begins to be secreted in larger quantity. But the milk has not "dried up," on the contrary the full flow of milk is just about to be established. Two cases from real life may serve to illustrate this. They are taken from a paper in the *Clinical Journal,* by Dr. Eric Pritchard, February 2nd, 1910:

Two Interesting Little Stories.

A Baby (A. B.—), born January 1th, 1907, was brought to my "infant consultations" at the St. Marylebone General Dispensary on January 17, 1907. At birth the infant weighed 7 lb. 10 oz.; it now weighed 6 lb. 14 oz.—a loss of 12 oz. in fourteen days. It had been put to the breast regularly.

The nursling, though somewhat thin, was in good condition, had a good color, and had never been sick. I suspected under-feeding from the symptoms, but was surprised to find the mother's breasts well developed, and affording the usual stream of milk on compression of the nipple. A test-feed was arranged, and, after waiting two hours since the last feed, the infant was put to the breast. The scales proved that the infant obtained less than two teaspoonfuls of milk. I therefore ordered the mother to give the baby one ounce of whey and twenty drops of cream alternately with breast feedings. During the following six days the test-feed showed that the amount of breast milk did not increase, but, all the same, the infant recovered part of the loss in weight, for on January 24th it weighed 7 lb. 4 oz.—a gain of 6 oz. The whey and cream mixture was increased on January 24th to one and a half ounces of whey and thirty drops of cream, and the mother, who was very anxious to nurse her baby, was encouraged in every way to persevere with breast feeding. On January 28th, that is to say, four days later, the scales registered a gain of half a pound in weight, but the test-feed still proved that this gain was in no way due to breast feeding, for the infant only abstracted one teaspoonful of milk from the breast. On February 4th the infant had gained a further half-pound in weight, but now the test-feed proved that the infant was obtaining a full amount (3 oz.) from the breast. The whey mixture was consequently suspended, and the infant continued to make uninterrupted progress; in fact, he proved to be a particularly fine baby, and was one of the prize-winners at our 1907 baby show.

This case is of peculiar interest, because it shows that with patience and perseverance an apparently non-active breast may ultimately secrete a good supply of milk provided that the infant can supply the necessary stimulus, and that the psychological factor is called into requisition. Encouragement on the part of the doctor and confidence on the part of the mother are most important elements in the treatment.

To show how mistakes in this connection may arise, I will again quote the case of an infant who was born in August last in one of our maternity institutions. The baby was brought to my consultations at the end of November; it was bottle-fed and doing badly. I asked the mother why she was not nursing it. She told me that her milk had disappeared on the fourth day, and that the authorities in the institution had told her that she must bring the infant up on the bottle. The infant was consequently supplied with a diluted milk mixture, and hence the present trouble. But the interesting part of this case was that the mother, under the impression that she would thereby avert a second pregnancy, surreptitiously put the

infant to the breast at night, and had continued to do so ever since. I asked her whether she thought this practice was of any advantage to the baby, but she told me that she knew it was not, as she had no milk. More out of curiosity than for any other reason I ordered a test-feed to be given there and then. To my surprise, and to the mother's surprise, the weighing proved that the infant had extracted from the breast 3 oz. of milk. I promptly ordered a suspension of the artificial feeding, and when I saw the infant last it was flourishing on breast feeding alone.

For Babies Nine Months Old or Older.

The best bottle for the baby:

(1) One that has no tube.

(2) One that has no corners.

(3) One with a wide opening.

(4) A nipple that fits directly over the wide opening.

Care of the bottle:

(1) Keep a little covered pan for the bottle and the nipple.

(2) Fill the pan with a quart of water in which a teaspoonful of baking soda is dissolved.

(3) Take the nipple off the bottle and turn it inside out, empty out any milk left; rinse bottle and nipple with cold water, then put the bottle and nipple into the pan and boil about ten minutes. The bottle and nipple are now clean. Cover the pan and leave it until time for next nursing. Do not use the same water twice.

Milk for the Baby.

The milk must be good, not skimmed and watery, and kept clean and cold in a sealed or capped bottle till it gets into the baby's bottle. Then hot water may be added to warm it and a little milk-sugar (to be bought at the druggist's) to sweeten it, and perhaps a little cream to enrich it.

Good milk may be made bad:

(1) By not keeping it covered, as in a sealed or capped bottle, from dust, dirt and flies.

(2) By not keeping it cool.

(3) By keeping it too long. Give baby fresh milk never more than 24 hours old, and the fresher the better.

(4) By putting it into any vessel that has not been boiled just before or at least rinsed out with boiling water.

(5) By using a dirty nipple or bottle. Nipples and bottles are not clean enough for a baby's milk unless they have been boiled and kept clean.

Hints on Feeding.

It is well known that no baby nursed by the mother should have its food changed to cow's milk or anything else in the hot weather if this may by any means be avoided. About eight or nine months after birth is soon enough to give the baby artificial food. The baby then has several teeth, which is nature's notice that the baby can digest artificial food.

Olive Oil.

When a baby is not thriving, try giving a few drops of the best olive oil on its tongue from a clean medicine dropper. The oil may be sweetened a little with milk sugar. If the baby takes this well, increase it very gradually until a small teaspoonful is given three times a day.

At the age of about nine months the healthy thriving child can digest good clean cow's milk, with but little hot water and milk sugar added. "Top milk" is usually good for this purpose. But the change from nursing by the mother to nursing by the bottle is a great one to the child.

How to Make Whey.

One pint of good milk. (This makes about 12 ounces of whey.)
Liquid Rennet (3 ounces cost about 25 cents).
A dairy thermometer (cost 25 cents).
(1) Heat the pint of milk to 98½ degrees.
(2) Season with salt.
(3) Pour into a warm bowl.
(4) Stir in gently one teaspoonful of liquid rennet, mixing all thoroughly.
(5) Set the bowl in a moderately warm place, where it will not get cold or be shaken.
(6) When it has formed a firm jelly (which should be in a few minutes) break the jelly up thoroughly, strain it, and heat the liquid to 150 degrees, stirring it well for a few minutes at this temperature. Strain again and set away ready for use.
(7) Add cream, milk sugar, or water according to the doctor's directions. No baby should be fed on whey except by a doctor's directions, as there is not much nourishment in it.

Cow's Milk.

One great difficulty about cow's milk is that it forms a tough curd in the infant's stomach. It may be rendered more easily digestible by adding one grain or two grains of Sodium Citrate to one ounce of milk. A doctor should order the exact amount. But this is a useful fact to know. It is a modern plan for helping the baby to thrive.

Sugar.

The mother's milk has more sugar in it than cow's milk has. Hence it is a good thing to add a little sugar to each feeding of cow's milk. The best form is milk sugar (bought at any drug store), but any pure sugar will do. Add a small teaspoonful to about six ounces of milk.

Water.

Cow's milk is more easily digested by the baby if a little water is added. This should always be boiled first to be sure that it is perfectly clean, except in very warm weather, the addition of boiling water makes the milk a better temperature. The convenient way to add milk sugar (see above) is to add it to the water.

To Make One Quart of Oat or Barley Water.

Do not feed a baby on barley water alone, except by a doctor's advice, when the baby is ill. Otherwise there is danger of starving the baby.

Boil two tablespoonfuls of barley flour in a quart of water until it is reduced to half the quantity, then add sufficient water to make up the quart.

Always keep clean and well covered.

Mr. John Ross Robertson has added another to his many kindnesses to children by establishing a Pasteurizing Department in connection with the Hospital for Sick Children in Toronto, where modified milk mixtures for well babies are prepared. The following formulæ are those prescribed and recommended by the physicians of the hospital staff.

Formula No. 1—For 1 to 4 Weeks.

16% Cream, 1½ oz.
Whole Milk, ¾ oz.
Milk Sugar, 7 drams.
Lime Water, ¾ oz.
Boiled Water to 18 oz.
Fill 9 bottles, 2 oz. each. Feed every 2 hours.

Formula No. 2—For 2 to 3 Months.

16% Cream, 3 oz.
Whole Milk, 3 oz.
Milk Sugar, 9½ drams.
Lime Water, 1 oz.
Boiled Water to 24 oz.
Fill 8 bottles, 3 oz. each. Feed every 2½ hours.

Formula No. 3—For 4 to 5 Months.

16% Cream .....4½ oz.— 5¼
Whole Milk .....9 oz.—10½
Milk Sugar .....12 drams—12
Lime Water .....1½ oz.— 1½
Boiled Water to .....35 oz.—42
Fill 7 bottles, 6 oz. each. Feed every 3 hours.

Formula No. 4—For 6 to 7 Months.

16% Cream, 4½ oz.
Whole Milk, 13½ oz.
White Sugar, 1 oz.
Table Salt, small ¼ teaspoonful.
Barley Water, to 36 oz.
Fill 6 bottles, 6 oz. each. Feed every 3 hours.

Formula No. 5—For 8 to 9 Months.

16% Cream .....4⅜ oz.— 5
Whole Milk .....21⅞ oz.—25
White Sugar .....1½ oz.— 1½
Table Salt .....¼ teaspoonful— ¼
Oat or Barley Water to.....42 oz.—48
Fill 6 bottles, 8 oz. each. Feed every 3 hours.

For 10 to 12 Months.

Whole Milk.
Fill 5 bottles, 8 oz. each. Feed every 4 hours.

Pasteurize.

If you are not sure that the baby's milk is clean and the cow healthy, and the milker had clean hands and was careful, then it is at present safer to pasteurize your milk. Pasteurizing means heating the milk to about 180 degrees. Boiling raises it to 212 degrees, but boiled milk is not so good for the baby as fresh milk, nor is it as good as pasteurized milk? Do not keep milk more than 18 hours after pasteurizing it.

Directions for Home Pasteurization of Milk.

Use a metal pail or tin can which is several inches taller than the milk bottles. Fill the pail almost full of water and place it on the fire. When the water boils, set the pail off the stove. Now completely immerse the full-capped bottle in the water so that the cap is one-half to one inch under the surface. The immersing must be done quickly, otherwise the bottle is apt to break. Leave for twenty or thirty

minutes. Then remove the bottle and set it aside until it has cooled somewhat; after which it should be placed in a pail of running water under the cold-water faucet. The bottle should not be transferred directly from the hot water to the cold water, as this often causes it to break. When the milk has cooled thoroughly, place it in the ice-box until it is used.

Home-made Refrigerator.

Materials.	Cost.
Sawdust	10 cents.
1 butter tub with lid	"
Blue denim	"
Ice	3 cents.
1 empty lard pail	"

Make a cushion of the blue denim to fit inside the top of the butter tub. Place a thick layer of sawdust in the bottom of the butter tub. Wrap the ice in newspaper and put it in the bottom of the lard pail. Stand the milk bottle on the ice. Put on the lid of the pail and stand in the butter tub. Pack the sawdust all around the pail. Put on the cushion on top. Put on the lid of the tub. If the ice cannot be afforded, the milk, if cold when put in, will keep cold in such a sawdust box for 24 hours.

Common Sense.

No one who is not in direct contact with the problem of How to Feed Babies would believe it possible that people could show so little common sense about such a matter. Two women were overheard during the year at the Union Station, Toronto, comparing notes on what they gave their babies. One drew the line at raw onions, but the other considered this rule quite unnecessary. Miss Tyson, of the Children's Hospital, Chicago, met a tall, gaunt woman there one day with a small thin three-year-old girl who had serious eye disease. The nurse asked if she had other children. "Yes," she said, "I have two more and they are both sick. The one eighteen months has been sick ever since last Sunday, when I gave it a pork chop to eat, and the one four months has never been well; the Eagle brand milk does not agree with it!"

They Kill the Baby.

Instances have been found in Ontario of infants under one year old being given beer, bacon, and doughnuts. If it is possible to kill the baby, probably these articles of diet will do it.

Food That Suits the Baby.

There is another extreme—that of not giving the strong and healthy child food which would do it good. Oat jelly or stale bread crumbs would do to begin with. Oat jelly is made as follows:—

Soak 4 ounces of coarse oatmeal in a quart of cold water for 12 hours. The mixture is then boiled down so as to make a pint, and is strained through a fine cloth while it is hot. When cold a jelly is formed, which is to be kept cold until needed.

When the child is about one year old it is time to begin feeding it with a spoon. A little bread, one day old, may be added to the milk. As soon as possible it is better to do without a feeding-bottle. Some infants will not take bread until

the age of two years, or even older. Equal parts of oat jelly and milk, warmed, with a little salt added and occasionally a little broth, preferably chicken broth, with bread, may be used. At the age of twelve or thirteen months, the child should have about five meals a day, such as the following:

7.00 a.m. Stale bread crumbs, soaked in a breakfast cup of new milk.

9.30 a.m. Equal parts of oat jelly and milk, slightly warmed, and a little salt added to suit the infant's taste.

12.30 p.m. One-half pint of well-made chicken broth, with the fat carefully removed, and with stale bread crumbs soaked in it.

3.30 p.m. Equal parts of oat jelly and milk, warmed.

6.30 p.m. Same as 7.00 a.m.

At fourteen or fifteen months, some thoroughly boiled rice may be added to the diet list.

At sixteen months, a little butter of the best quality may be spread on the bread. Fresh bread should never be given. A crust of bread may occasionally be given, the infant will try its teeth upon it.

At eighteen months a well-baked white potato may be given, and at nineteen or twenty months eggs may be added.

At about fifteen months it is usually safe to try a little baked apple, or a teaspoonful of orange juice, and when peaches are in season, a small piece of a ripe peach may be given to a child in its second year, say about sixteen months.

At about two years and six months of age young peas and other easily digestible vegetables may be given, very carefully at first. Different fruits may now be tried, but they should be cooked.

Towards the end of the third year a small amount of meat may be given, but not every day, as meat is not required until the child is about three or four years of age. Chicken, mutton chop, roast beef and beefsteak are the best meats for young children. Great care should be taken that the meat is cut small and the child taught to masticate properly. A good plan is to give the child an egg one day and on alternate days meat or fish.

Never give cake or candy to a little child. Wait at least till the child goes to school.

Dangerous Drugs.

Almost all of the so-called soothing medicines given to infants, contain opium, morphine, or some other dangerous drug. They should never be given to any baby.

Mrs. Winslow's Soothing Syrup (morphine sulphate).
Children's Comfort (morphine sulphate).
Dr. Fahey's Pepsin Anodyne Compound (morphine sulphate).
Dr. Fahrney's Teething Syrup (morphine and chloroform).
Dr. Fowler's Strawberry and Peppermint Mixture (morphine).
Dr. Grove's Anodyne for Infant's (morphine sulphate).
Hooper's Anodyne, the Infants' Friend (morphine hydrochloride).
Jadway's Elixir for Infants (codein).
Dr. James' Soothing Syrup (heroin).
Koepp's Baby's Friend (morphine sulphate).
Dr. Miller's Anodyne for Babies (morphine sulphate and chloral hydrate).
Dr. Moffett's Teethina Teething Powders (powdered opium).
Victor Infant Relief (chloroform and cannabis indica).

Printed Advice to Mothers.

A great deal of good may be done by giving a mother a leaflet she can keep and read over often. The following leaflet is excellent.

HOW TO BRING UP A BABY.

Natural Feeding.

1. The natural food of a baby is its mother's milk. If the mother has enough good milk, the baby must have nothing else until it is eight or nine months old. Babies who are entirely breast-fed are stronger than bottle-fed babies. They thrive much better than bottle-fed babies, and they very rarely have summer diarrhœa.

Directions for Suckling.

2. Breast milk, *and nothing else,* is the proper food until a baby is eight or nine months old. Gruel, arrowroot, cornflour, biscuits, crusts, and patent foods must never be given.

3. If the mother has not enough milk, a bottle of fresh cow's milk and water may be given once or twice in 24 hours.

4. Always suckle the baby at regular intervals.

Whether a baby is fed by breast or bottle, it should not require feeding between 11 o'clock at night and 5 in the morning, after the first six weeks.

Allow at least 15 minutes for every feed by the breast or bottle.

Do not rock the baby after feeding.

Raise the head and shoulders for the baby to bring up the wind, after a feed, before laying it down.

5. Always lay your baby down awake, and do not sit with it till it goes to sleep; do not leave a light in the room.

6. Do not feed a baby every time it cries, as over-feeding is a frequent cause of illness. If it cries between its feeds, or at night, see that it is dry, that there are no pins or other discomforts, that its binder is not too tight, and, if nothing is found, it may be thirsty—give a teaspoonful or two of warm water only.

Directions for Weaning and Feeding Afterwards.

7. Do not begin to wean the baby, unless by a doctor's orders, until it is 8 or 9 months old. Wean entirely before the end of the first year. The way to begin to wean a baby is to give it good cow's milk two or three times a day, instead of the breast feeds.

8. At 8 or 9 months the child may also have *the yolk of one egg very lightly boiled* or *one tablespoonful of red gravy* once a day, *which may be given in one of the feeds.* At 10 or 11 months the milk may be thickened once a day with well-boiled oatmeal, strained through a fine hair sieve or coarse muslin, or bread soaked for an hour in cold water and then strained and thoroughly boiled in fresh water, or nursery biscuit. The food must be thin enough to pass through a fine strainer.

9. At 12 months a cup of beef tea or broth, a lightly boiled egg, or milk pudding, may be added. Be sure that the pudding is not lumpy.

10. At 18 months begin giving a little lean meat or fresh fish, scraped or pounded into a pulp; with this the child should have thin bread and butter and finely mashed potato. Plenty of milk should still be given.

Artificial Feeding.

11. A great deal more trouble must be taken to bring up a baby by hand than by breast feeding—because:—

(*a*) It is very difficult to obtain pure milk.
(*b*) Bottles, teats, jugs and spoons do not keep clean.
(*c*) Cow's milk has to be prepared to imitate human milk.
(*d*) The food is not at the heat of the breast milk.

Directions for Hand Feeding.

12. Fresh cow's milk (not condensed milk) should be obtained twice a day. *The milk should be scalded at once.* To do this, put the jug into a saucepan which has been half filled with cold water, place on the fire and bring to the boil. When the water is boiling, the milk is fit for use. The jug should then be placed in cold water, to keep the milk cool; and should be covered with a clean plate or slip of glass, to keep out dust and flies. All water put into the baby's food must have been *boiled.*

13. All bottles, teats, jugs and spoons should be cleaned directly after use; first with cold water, then with scalding water. Teats must be turned inside out for cleansing. Once a day put bottles and teats in a saucepan with cold water, and raise to the boil.

14. The best feeding bottle is boat shaped, marked in tablespoonfuls, with simply a leech-bite teat. Never use a feeding bottle with a rubber tube. Always keep two bottles in use and two teats or more. Bottles and teats after they have been scalded must be kept in a basin full of cold water that has been boiled.

Preparation of Food and Quantities.

15. All milk foods should be sweetened with sugar and given warm (not hot). The quantities of milk and water should be measured out.

Age of Child.	Milk.	Boiled Water.	Total Amount for each Meal.	Add Sugar.	Time.
During—					
1st fortnight	1 Tablespoon	2 Tablespoons	3 Tablespoons	½ Teaspoon	2 hours
2nd "	2 "	3 "	5 "	½ "	2 "
2nd month	2½ "	3½ "	6 "	½ "	2 "
3rd "	4 "	4 "	8 "	1 "	2½ "
4th "	5 "	4 "	9 "	1 "	3 "
5th "	6 "	4 "	10 "	1 "	3 "
6th "	8 "	4 "	12 "	1 "	3 "
7th "	9 "	4 "	13 "	1 "	3 "
8th "	10 "	4 "	14 "	1 "	3 "
9th "	12 "	4 "	16 "	1 "	3 "

Increase feeds very gradually, but feed by common sense, not by rule. If the baby seems unsatisfied, try the milk stronger. If the baby cannot digest it, try it weaker.

If the milk with plain water does not agree, give the same amount of barley water with the milk if the bowels are costive, and if the bowels are loose use lime water instead of plain water. If the child refuses the mixture, or vomits it, or if diarrhœa continues, the doctor must be consulted.

After 9 months the yoke of an egg may be mixed with a feed once a day.

Things to be Avoided.

1. Never force food down a child's throat, nor feed it when it retches.
2. Never keep the milk that the baby leaves for the next feed.
3. Never give skimmed or separated milk.
4. Never use a feeding-bottle with a rubber tube.
5. Never use a "dummy."
6. Never give a baby "just what is going," or "what you have yourselves."
7. Never give a baby teething powders, soothing syrups, tea, coffee, beer, wine, spirits, herrings or bloaters, new bread, pastry, cheese, nuts, or unripe fruits.

General Directions.

1. The Eyes.—The baby's eyes must be washed once a day at least. If the eyelids swell and run with matter and look red, tell the doctor at once, as delay is dangerous, and one or both eyes may become blind if not treated properly. The discharge is very catching. For removing it, tear quite clean linen rag or cotton wool into small pieces; do not put the same piece back into the water, but throw it in the fire, and take a fresh piece every time, before touching the eyes again.

2. Washing.—In order that the baby may thrive on its food, it should be protected from chills, which will upset its digestion. This can only be done by keeping its feet and legs warm and taking care that it is bathed quickly and not exposed too much while being dried. Wash the child all over once a day in a warm room with warm water and soap. Dry carefully with a soft towel, especially about the head and ears after the bath, then the baby will not take cold. Be careful to dry thoroughly the lower parts of the body, under the knees and under the arms. It is a good plan to put the child in bed between the blankets for half an hour after the morning bath. The mouth should also be carefully washed.

3. Sleep.—The child should sleep in a cot or basket alone. Even a banana box with a calico bag of chaff may be used. Many babies are overlaid every year from sleeping with their parents. Keep the window one or two inches open day and night except in stormy weather. Never use sleeping draughts, soothing syrups, teething powders, or any other medicine to make the child sleep.

4. Clothing.—*Always flannel* next the skin, not flannelette, which catches fire easily. Do not put the binder on too tight, with the notion of supporting the body. No part of the body, except the head and hands, should be bare. Underclothing and diapers should be of cotton cloth and as soft as possible. They should be changed as soon as wet, and should be immediately put into hot water and washed out.

Every time the child's bowels are moved, the parts should be well washed and all the creases about that part of its body should be cleaned out.

The baby is often made sore because it is not well washed, or because powder is put on it while it is still dirty, or because the diapers are not washed out, but are only dried, before being used again.

5. Fresh Air and Sunlight are nearly as important as food for a baby. It should be taken out every day in fine weather, but not after sunset. When out in a perambulator a baby should sometimes lie on its side, not always on its back—because, on its back, the sun is bad for its eyes, even though closed, and it cannot bring up the wind so easily.

6. Nursing Mothers should have plain, nutritious food. Above all things, mothers should avoid spirits, which are very hurtful to the child.

To Make Barley Water.

Barley water is best made by taking one teaspoonful of prepared barley (in powder), adding it to one pint of boiling water, and then boiling for five minutes; it must be made fresh each day at the very least, and if possible, every six hours and kept covered in a cool place.

To Make Lime Water.

Slake a piece of freshly-burned lime about the size of an orange by sprinkling water upon it; then put the crumbled lime into a gallon jar, and fill up with water, corking it tightly; shake it well, and in twenty-four hours it will be ready for use. Pour off as much as you require quite clear and fill up the jar with fresh water. The jar is to be kept well corked, for lime water soon spoils by exposure to air.

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MIDWIVES.

Not only is the education of the mother and of the community important, but we must get our facts before us. Where is the baby? And who is looking after it?

One of the questions on which we greatly require information is the number of cases in which mother and child in obstetrical cases are attended, not by a physician, but by a midwife. It would seem that information on this point might well be required, both when a birth is registered, and when the death of a child under one year old is registered. In Boston, on account of much interest being taken in the matter by the medical profession, and the extension of the dispensary facilities for obstetrical work, only about 10 per cent. of all mothers are attended by midwives at such times. But in New York, Buffalo, and Chicago, it is supposed that almost 60 per cent. of all births are attended by midwives, and it is known that where the foreign population is large, the proportion of births attended by midwives is not inconsiderable. In 33 of the 49 States and Territories of the United States there is no law providing for the licensing or regulation of midwives. In 13 of the States there are laws requiring midwives to pass an examination before being licensed to practice. but there is no attempt to educate these midwives or prepare them for their duties.

How Many Midwives in Ontario?

In the absence of reliable information no statement can be made. But it seems at least a matter of great importance in regard to Infant Mortality to know how many infants and their mothers are cared for by midwives only, and with what results, so far at least as Infant Mortality is concerned.

The Central Midwives' Board, established in England in 1902, to examine, license, and control midwives, has undoubtedly been of great service in Great Britain, but whether or not such a plan would suit Canadian conditions is at least doubtful. Our nurses, graduates of the leading Canadian hospitals, all or nearly all have an excellent training in obstetrics, and so far, at least, as that aspect of the matter is concerned, the position of affairs with us is different. It is the unknown and unlicensed midwife, practising among the non-English speaking people, not yet Canadianized, that may be the danger. And until we have accurate statistics on the subject, we may well be uneasy as to the real state of affairs.

Normal Infant Mortality.

It cannot be reasonably expected that all infants should escape all the dangers incident to birth and to the first year of life. Dr. Rich, of Detroit, places a "reasonable infant mortality for the State of Michigan" at 70 per 1,000 living infants, and quotes Holt, of New York, who is an authority on pedistries, as follows: "I judge that the well-to-do classes, with the best care, the mortality from all causes during infancy does not exceed 2 to 3 per cent. Another authority, Dr. J. F. J. Sykes, (St. Pancras, London), considers 50 per 1,000 births a more reasonable figure for large cities.

Reduction of Infant Mortality.

No fact in sanitary history can be better proved than the fact that Infant Mortality can be reduced by sanitary instruction. A good example of this is furnished by Chicago, where the first organized efforts were made in 1895, with what result the following table and chart will show.

CHILD MORTALITY—UNDER ONE YEAR OF AGE.

Comparing Two Twelve-Year Periods: Before and After the Department of Health Actively Prosecuted Measures for the Reduction of Infant Deaths, Especially During Hot Weather.

	Before—1883-1894.		After—1896-1907.		Percent Reduction of Death Rate "After."
	Deaths under One Year of Age.	Death Rate per 1000 of Total Population.	Deaths under One Year of Age.	Death Rate per 1000 of Total Population.	
January	4,784	5.08	5,736	3.17	37.6
February	4,710	5.49	5,783	3.51	36.1
March	5,849	6.21	6,013	3.32	46.5
April	5,799	6.36	5,489	3.13	50.8
May	4,759	5.05	4,826	2.66	47.3
June	5,064	5.56	4,340	2.48	55.4
July	11,222	11.92	7,788	4.30	63.9
August	8,243	8.75	8,152	4.50	48.6
September	5,803	6.37	6,008	3.43	46.2
October	4,014	4.26	4,662	2.57	39.7
November	3,445	3.78	4,007	2.29	39.4
December	4,242	4.51	4.913	2.71	39.9
Totals	67,932	6.12	67,717	3.18	48.1

How it Was Done.

The chief means adopted was the education of the mother in the care of the baby, especially in hot weather. After 1900 there was an enormous increase of the Slav population of Chicago. Among the Slavs infant mortality is great—greater in Europe than after they come to America. In 1908, the Department of Health, put 100 physicians in the field in July and August, and in the streets where the Infant Mortality was greatest, the physicians called at every home to help the mother in the care of the baby.

Don't Kill Your Baby.

The City Council, for this purpose, transferred $10,000 from the Contagious Diseases Division to the Special Division on Infant Mortality, under Dr. Caroline Hedger. This work has since been kept up in summer, and has been of great benefit. Last summer the two most modern devices were the cartoons of Mr. Wilder, the cartoonist of the *Record-Herald,* which were seen far beyond Chicago, especially the famous cartoon, " Don't Kill Your Baby," and the bill-posters' work in placing these cartoons at the very doors of the houses where the babies died.

" The Spot-Map."

A definite record, used in all this work, is a " Spot-Map " of Chicago, marked with a little round mark at the place where any baby died. The bill-posters and the doctors follow the route of the little white hearse, as shown on the " Spot-Map."

Care for the Mother.

Massachusetts is the first place in America to enact legislation prohibiting the employment of women in factories or other industries immediately before or after the birth of a child. The law was approved March 31, 1910, and went into force Jan. 1, 1912.

It enacts that "no woman shall knowingly be employed in laboring in a mercantile, manufacturing or mechanical establishment within two weeks before or four weeks after childbirth."

VITAL STATISTICS.

Great Britain.

The vital statistics of Great Britain, Ireland, France, Germany, and other civilized nations are reliable. They may not be perfect, but they are good enough to be reliable and to be used in calculations. Ours are not. One of the very first things to be done is to get our births registered. We really cannot do anything worth mentioning, to reduce infant mortality, until we do that. Where is the baby?

Notification of Births.

In Great Britain the law is known as the Notification of Births Act, 1907, and provides that births must be notified within 36 hours, under a penalty of 20 shillings. It requires to be adopted by the municipality before it comes into force in

that municipality, and the Government, through the Local Government Board, made it clear from the beginning that the Government would not sanction the putting the Act into force unless and until there was a reasonable prospect that some useful purpose would be served by the Act in that municipality. That is, the municipality had to provide skilled persons to visit the mothers and infants, to give them expert advice and counsel and give the babies a better chance to live and thrive. The Act also provides that the local authority shall give to any doctor or nurse, on request, for their use in this matter, prepaid and addressed post cards, containing the form of Notice of Birth. The Manchester Corporation lately applied to the Local Government Board for permission to pay a fee to a doctor for any such notification, but they did not get leave, the reason being, it is supposed, that the Government may pass a general (not adoptive) measure for the Early Registration of Births.

Where the Act has been adopted, it has worked well. In Eastbourne, for example, it has secured the notification of 91 per cent. of the total number of births, omission of the other 9 per cent. being due to ignorance of the Act.

The United States.

In the United States, in the opinion of Dr. Cressy L. Wilbur, of the United States Bureau of Vital Statistics at Washington, this matter is greatly neglected. It is supposed that some cities register only 20 per cent. of their births and others 90 per cent.

A Disappointment.

How nearly the latter figure is correct may be judged by the experience of Rochester. In 1910 the sanitary inspectors whenever they inspected a house for any cause asked if there were any children in it under two years of age. If so their names, parents' names, date of birth and name of attending physician were reported to the Registrar of the Vital Statistics to see whether the birth was recorded. School nurses and nurses in charge of milk stations gathered similar statistics, and at the end of 1910 it was found that the number of recorded births was twenty per cent. more than in 1909. Another plan was also adopted. Names were taken from the Baptismal Records in the churches and compared with the official records. It was found that twenty per cent. of these were previously unrecorded. This makes it quite certain that not nearly ninety per cent. of the births in Rochester are recorded.

Mr. Carmody, Attorney-General of the State of New York, has just given a decision to the effect that if any physician fails promptly to report births and deaths to the proper authorities his license to practise medicine may be taken away.

The State Board of Health for the State of New York regards this as a most important decision.

Organization.

Among the signs of progress in combating infant mortality, is to be observed that many Associations and Exhibitions have been organized. It is felt that individual effort, while indispensable, is not enough. The National League of Physical Education and Improvement, founded in 1905, helped to establish infant consultations and schools for mothers. It has now been decided to form of these organizations A Separate Branch or department of the National League for Physical Education and Improvement. Thirty-four of these societies have joined

together to make it. It is hoped that thus there will be obtained: (1) A uniform method of keeping records and statistics. (2) The formation of new societies on the best lines, as shown by the failure or success of older societies. (3) The publication of leaflets, charts, diagrams, pictures, and other educational material in the most acceptable and economical way. (4) The co-operation of all interested in infant welfare through the above means, and by general conferences and public meetings.

This work was promoted by a general meeting in London in July and another in December. The chairman, Ald. Broadbent, laid before the meeting the constitution which had been prepared, and a strong provisional executive was formed to make arrangements for the first annual meeting in 1912.

Another event in the world's infant mortality campaign of 1911 was a Health Exhibition at Bristol, England, of "Bristol's Best Babies." The Exhibition was a great success, especially as an educative force. It was held on March 1, 2, 3 and 4, 1911, under the auspices of the Bristol Maternity and Nursing Aid Society, and was organized by the Secretary, Dr. W. L. Christie. The catalogue was a readable document containing the names of the three hundred and fifty babies who were entered, and such paragraphs as the following:

A Heroine.

"The mother, who brings up a large family of healthy children on a pound ($4.86) a week and often less, is a heroine worthy of admiration and honour."

A Curse.

"We daily witness the pinched faces of babies whose expression is a silent curse louder than that of the strong man in his wrath. Let Statesmen see to it and alter it."

Ten Per Cent.

In connection with the good done by this Exhibition it is to be observed that the rate of infant mortality in Bristol is now down to 100 per 1,000 births.

The Third International Congress for the study of infant mortality was held at Berlin, September 10th to 15th, 1911, and like the previous congresses at Paris and Brussels, is likely to have far reaching results. Dr. Charles Hodgetts, medical adviser to the Canadian Commission of Conservation, Major Lorne Drum, M.D., and Prof. Adami, of McGill University, were among the Canadians who were present. There were upwards of 650 delegates. The Congress was divided into four sections: (1) Teaching and special instruction. (2) Practical work for the care and protection of infants. (3) Legislation, guardianship and other official measures for the protection of infants. (4) Statistics.

It will be observed that even the form of this programme shows how great an advance has been made since the last International Conference. Much is taken for granted, nothing is said as to the importance of infant mortality, and the discussions at the Conference are almost altogether on methods of educating doctors and nurses and the general public on the question of infant mortality. The meetings took place in the Reichstadt and the German Queen and Empress was present

at the opening. The British Government was officially represented by Dr. Newsholme and Ald Broadbent. A special meeting of British Delegates was held during the Congress, in which Canadian and American delegates took part, and it was determined to hold a British Imperial Conference on infant mortality, which should practically be an English-speaking Conference, in London in 1913, at or near the time of the International Medical Congress.

CHILD WELFARE EXHIBITIONS.

New York.

A new and somewhat wonderful manifestation of the trend of modern thought about childhood was the Child Welfare Exhibition, held in the 71st Regiment Armory, New York City, January 18th to February 12th, 1911. Even to read the catalogue of the remarkable exhibition was stimulating and to spend some time in it could not fail to interest and instruct anyone with any capacity for interest and instruction.

Many of the exhibits were directly upon infant mortality, and a paper upon the subject was presented by Dr. Ira S. Wile at one of the evening Conferences.

Chicago.

This New York exhibit was afterwards secured by the City of Chicago and by a liberal gift from Mrs. McCormick, enlarged still further. The educational influence of these exhibitions was very great.

St. Louis.

Later in the year another great Child Welfare Exhibit took place in St. Louis.

Montreal.

A Child Welfare Exhibition will be held in Montreal in the autumn of 1912. An event to which all those in Canada interested in child welfare are looking forward.

The plans for the exhibit, promoted as they are by both French and English, by the City, the University, the Associated Charities, the Settlements and all the clubs and organizations in Montreal generally, are such as to assure its success. It is expected that the subject of infant mortality will receive a large share of attention at this exhibition.

Montreal Child Welfare Exhibition.

The infant mortality of Montreal is phenomenal, greater than the infant mortality of any other city in America. Of the total deaths in Montreal 54.92 per cent. die before the age of 5 years. The exhibition, which will be held in the autumn of 1912, promises to do a great deal of good. It has been found in Bristol, in Newcastle, in New York, Chicago and St. Louis, wherever there has been an exhibition of an educational character the public have crowded it to the doors. Men, women and children have flocked into the building day after day,

and it has been the leading topic of conversation everywhere. This all helps. The cinematograph, the popular lecture, the efforts of the volunteer guides who are in charge, and many other features, catch the popular attention, and teach many useful lessons. The Sword of Herod, in the twentieth century, is ignorance. And not only the ignorance of the mother, but the ignorance of the community causes the loss of so many babies.

The Canadian Public Health Association.

A new health organization for the Dominion held its first meeting in Montreal in December, 1911, under the direct patronage of His Excellency the Governor-General, who opened it in person and visited all the sections. Two papers on infant mortality were presented at this meeting and it was frequently alluded to as one of the subjects which must be taken up by all interested in National Welfare.

American Association for the Study and Prevention of Infant Mortality.

This Association held its second annual meeting in Chicago, November 16th to 18th, 1911, and already in the short space of two years, has developed an efficient organization with increasing interest and confidence shown by the community. The attendance this year was larger and more representative than before and the papers were practical. Among the subjects upon which most time was spent were municipal work to prevent infant mortality, the problem of the midwives, and the preparation at school and home of the future mother and father for parental duties. The "Little Mothers' League," established and carried on in New York schools by the Child Hygiene Department of the Department of Health in New York, under Dr. S. Josephine Baker, and similar plans in Chicago and other cities are felt to be a real contribution to the solution of the problem of infant mortality.

The motto of the Society is in the words of Dr. Arthur Newsholme, medical adviser to the Local Government Board: "Infant mortality is the most sensitive index we possess of Social Welfare." This motto indicates the wide and practical interpretation which the Society gives to its duty.

Schools for Mothers.

It must always be remembered that conditions which killed 1,727 infants under one year old in a city like Toronto in 1909 did not stop there. Conditions that kill so many always disable others. Low vitality, enfeebled resisting power, a poor constitution, are the inheritance of children whom scandalous sanitary conditions have not killed, but have maimed. It is not to preserve the unfit that we plead when we would prevent infant mortality. It is the protection of the fit. that they may continue fit, not the preservation of the unfit that is the result of a sanitary campaign. Dr. Newsholme, in his classical researches (report published last year) shows that in countries where the infant mortality is low, the death rate at any other age is correspondingly low. That shows that the babies who were saved were fit to survive if they got anything like a fair chance. And one of the best ways to secure a fair chance for the baby is to teach the mother. A properly equipped school for mother includes:

(1) The infant consultation.
(2) The school for mothers.
(3) The restaurant for nursing mothers.

It requires the following staff:—

(1) A medical officer. (Fully qualified physician.)

(2) Lady superintendent. (Trained nurse.)

(3) Ladies committee. (Volunteer helpers, ladies who know something about homes and children and who are both interested and intelligent. The committee should be organized by appointing one lady as Chairman and President of the School for Mothers and others as Secretary and Treasurer.)

It is essential that the doctor, the nurse and two or three of the committee should be present at every consultation. The members of the committee can be of the greatest assistance in receiving the mothers and babies, conducting the classes, preparing the babies for being weighed, filling out the weight-charts, etc., etc., etc.

The object of an infant consultation is to keep the well baby well. If the baby is sick, it should be sent to the hospital at once or the Dispensary. For an infant consultation one large room may do. But if possible there should be:

(1) A doctor's room, where the doctor sees the baby, the nurse and the mother being present.

(2) A weighing room where the baby whose turn comes next is being undressed and weighed by its mother and one of the ladies.

(3) A waiting-room where the mothers and babies are received by one of the ladies and wait their turn.

(4) One or more rooms where practical instruction is given. This is the School for Mothers and the first object of this and every other part of the "School for Mothers" is to make sure that the baby is nursed by the mother. This is the most important thing in infant care and management. Then help is given in every detail of infant care and hygiene, in cookery, plain sewing, dressmaking, cutting out, mending and renovating. Paper patterns of baby garments are sold cheap. Demonstrations must be given with somebody's baby on how to bath and dress and care for an infant.

An infant consultation is much cheaper, and much more useful and satisfactory than a milk depot. But a milk depot has its place too, especially when the infant is nine months old or more.

The rooms must be kept decidedly warm, about 70 degrees being the proper heat for an infant. The place needs to be thoroughly ventilated, but not draughty. Special provision must be made for this, as if something be not done to keep the air reasonably good, the ladies committee may become extinct.

An extra room is almost necessary, when a sick baby comes, it must be seen quickly by the doctor, who should direct it to some hospital or dispensary. But this takes a few moments and afterwards the room should be well-aired before others are admitted to it.

The furniture should be simple, but not ugly or depressing. The walls should be of a pleasing tint. Everything should be shining with cleanliness and should be pretty. Flowers, good pictures, maxims and mottos and wise sayings, simple rules and charts and apt quotations all help. A few toys are a great comfort. So, too, several cradles made out of banana crates, to hold the babies, etc., etc. Above all, the character and efficiency of the doctor, the nurse, and the members of the committee will be the greatest stronghold and safeguard of the school and will secure its success. They all need knowledge of the world, refinement, no small amount of patience and tact and real sympathy and insight, as well as special knowledge of some practical kind relating to the child and the home.

If the mother is to have dinner (and this is the way to feed the baby too) there must be a good kitchen under expert management. The assistants may be all learners, but the head must be an expert. No one else could do as Madame Coullet does at her restaurants for mothers in Paris, give for 3½d., including all working expenses, to every nursing mother who comes in with her baby and nurses that baby while there, a good meal of fish or fresh meat boiled or roasted, vegetables, cheese, or a stick of chocolate, with an unlimited supply of bread. The community which lets a baby be torn by "work" from the mother's breast, and lets the mother with her baby at her breast go hungry or starving is surely not only inhuman, but so stupid as to be blind to its own interests.

It must be remembered, however, that the Mother's Restaurant is only for emergencies. What is to become of the other children if the mother is away from home at dinner-time. If the meals are not taken at home it is a serious matter for the home. The destitute mother, with but one baby—the unmarried mother, the widow, there are these and others for whom this may be necessary, but while some way must be found to serve the hungry mother, it should be a way which will not introduce a still greater evil.

RECORDS:

Home visiting by the ladies of the committee and also by the nurses, is really essential and will help with the records, and, indeed, with every part of the work.

"Much useful and good work can be done on the statistical side if the cards and charts of each baby are carefully kept. As full particulars as possible should be obtained about each case, but there should be no elaborate tabulation in the presence of the mother, information can only be obtained by tact, and it should be regarded as strictly private. The record, of which the duplicate card is given to the mother, should only contain the simplest particulars, *e.g.*, name, address, and occupation of parents, name and date of birth of child (weight at birth if known), how fed, diet recommended and followed, and the record of the periodical weighings. The following particulars are, however, very useful for statistical and eugenic purposes: Occupation, age and earnings of parents and their circumstances (*i.e.*, kind and state of dwelling-house and sanitation), habits (temperate, industrious, or otherwise), religion or race, health of parents, any family diseases, number of children in family, and of conceptions of mother, number of still-born and of miscarriages (if any), number of children dead, and cause of death, whether the mother worked during pregnancy, and how soon work was resumed afterwards. State of health, weight, and height of child at birth, any defects, any apparent tendencies to disease, progress of weight, height, and health, teeth cut, intelligence, habits; how fed from birth (if artificially, give reason).

"Finally, the principles of the work must always be kept in mind—the lessening of unnecessary suffering and death among mothers and children, by the prevention and cure of disease, by the teaching of the ignorant, and by improvement in feeding, clothing, cooking, housing, sanitation, and in personal hygiene, and above all, by the encouragement of breast-feeding—the relief of poverty, but at the same time the encouragement of thrift and home-making. Not an easy work—often in individual cases impossible and discouraging—but surely abundantly worth doing, and in the long run bound to bear fruit in the increased healthiness and well-being of the race."—*H. M. B. in The Crusade.*

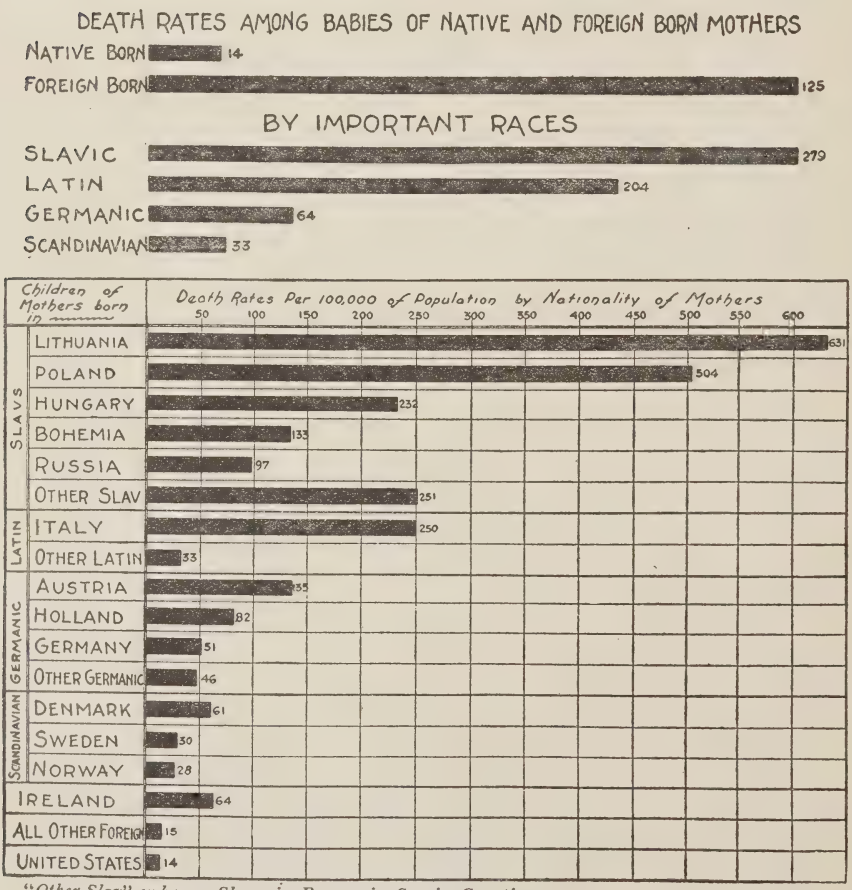
In regard to records, there are a few points of great importance. As already indicated, we must know particularly all about how the child is fed.

Probably next in order comes the exact cause of all the deaths under one year of age. Next the age of the mother. This has a marked effect on the child's chance of survival. If the mother is only 15 or 16 years of age her condition and the condition of the child are as pitiful as they are disgraceful to the community.

Another matter of the utmost importance is the nationality of the parents, as illustrated in the Chicago results. How does this compare with Ontario, or the Cities of Ontario? We do not know.

INFANT DEATHS FROM THE DIARRHEAL DISEASES DURING THE HOT WEATHER IN CHICAGO AND THEIR RELATION TO NATIONALITY OF MOTHERS

Death rates per 100,000 by Birthplaces of Mothers.



"Other Slav" embraces Slavonia, Roumania, Servia, Croatia.
"Other Latin" embraces France, Greece, Spain, Portugal.
"Other Germanic" embraces Belgium, Switzerland, Luxembourg.

Calcutta.

Chicago, is not the only city that has made this discovery. In Calcutta, where the population is 890,493, the infantile mortality rate was 273 per 1,000 births, and in some parts even this high rate was increased, for in six separate wards it varied from 350 per 1,000 to 447 per 1,000. There was a remarkable difference in the infantile mortality rate among the different nationalities. Among the Hindus it was 252 per 1,000, among Mohammedans 343 per 1,000, among non-Asiatics 141 per 1,000, among mixed races 260 per 1,000, and among other classes 238 per 1,000. The high rate among the Mohammedans, it is thought, may possibly be due to the defective registration of births among these people.

Know Where the Babies Die.

It would probably also be of great service to Know where the babies die. If every week we had a record in our newspapers of the number of deaths under one year old, arranged according to wards, with the nationality, the cause of death and a few other interesting particulars, it would affect public opinion and hasten the education of the public on this important matter.

The following card used in Chicago for recording visits to homes of the nurses under the direction of Dr. Caroline Hedger, is a good form of record:

Department of Health, Chicago.

Infant Welfare Service.

(Card 1)

Ward ..... Street ..... No. .....

House ..... Ft. ..... Rr. ..... Flat .....

Ft. ..... Mid. .....Rr. ..... Floor 1-2-3-B

NAME .....

Place Mother's Birth ..... Occupation.....

Place Father's Birth ..... Occupation.....

Children: Alive ..... Ages ..... Youngest Child Sex .....

General Condition ..... Dead .....

Ages at Death ..... Second Child Sex .....

General Condition ..... Abortions .....

Feeding Youngest: Breast ..... Breast and ..... Comm. .....

Pat. Fd. ..... Cow's Milk only ..... Cow's

and ..... Cond. Milk ..... Water .....

(Card 1.)—*Continued.*

Feeding Next Youngest:

If the Mother is Nursing what does she take to make milk?

Feeding: Regular ..... Too often .....Night

Feedings .....How many? .....

Milk: Boiled ..... Pasteurized ..... Covered .....

Kept on Ice ..... In Water .....

Bathing: Sponge ..... Tub ..... How often? .....

Clothing: Too much ..... Too little .....

Stool: Color ..... Consistency ..... Blood .....

Mucous ..... No. in 24 hours .....

Sickness in House: Cases Diarrhea ..... Tuberculosis .....

Chronic Cough ..... Contagious ..... Skin .....

LIVING ROOMS	Perf.	Allow
Cleanliness : Deduct when Unclean Floors 4, Walls. 3, Ceilings, 3, Ledges 3, Windows 2.	15	
Ventilation : Adjustable Windows 6, No Odor, 4.	10	
Lighting : Deduct 2 Points for every 3 per cent. less than 15 per cent. of Floor space.	10	
Presence of Flies :	15	
Crowding : Rooms, No..... Men .....Women..... Children ..... Boarders	10	
	60	

SURROUNDINGS	Perf.	Allow
Accumulations : Within 50 feet : Garbage—Rubbish.	15	
Yard and Areas : Space available.	15	
Plumbing on Premises : Deduct when leaking 4, Clogged 4, Odor 2.	10	
	40	
Plus Living Rooms	60	
Final Score.....	100	

Causes.

The realization of the importance of infant mortality has led during 1911 to a still more minute and searching scrutiny of the first causes of infant mortality.

Why do we lose all these lives? Certain aspects of the question have received special attention. Thus, the common house fly (Musca Domestica) used to be regarded as harmlessness itself. We now regard it as one of the most deadly enemies of man. And it has been readily recognized that the house fly helps to contaminate milk and so cause infant diarrhœa.

Researches which are now pursued with so much energy constantly result in new facts being brought forward. The influence of ALCOHOL has, of course, received marked attention. Professor Bunge's work is valuable in regard to the influence on the daughter of alcoholism in the father so far as the daughter's ability to nurse her child is concerned. Professor Bunge gives this table:

The Father Consumes Alcohol.	Daughter able to Nurse.
Not habitually	91.5 per cent.
Habitually, but moderately	88 per cent.
Habitually, immoderately	31.4 per cent.
Inebriate	10 per cent.

The Medical Officer of the Local Government Board, Dr. Arthur Newsholme, has directed two investigations during the last year which bear on infant mortality. One was an examination by doctors in London, Manchester, Birmingham and Shrewsbury, to ascertain the ORGANISMS IN EPIDEMIC DIARRHOEA. A great many different organisms were found, but none could be identified as the cause of the disease.

The other was in regard to THE HOUSE FLY. Dr. Newsholme points out that while not the sole cause of epidemic diarrhœa, by carrying the bacillus on their feet and elsewhere, flies are a good index of the probable contamination of milk and other foods in cities where scavenging is neglected and filthy privies are permitted. Flies, like infant mortality itself are an index that cannot lie as to sanitary conditions.

A third investigation on CONDENSED MILK was ordered by the Local Government Board. A rather fatal food for infants is condensed milk. The local Government Board has had a special report prepared on it by Dr. F. J. H. Coutts. He finds:

(1) That none of the condensed milk was free from germs. One at least of these germs found is suspected to cause infant diarrhœa.

(2) That the name of condensed milks is Legion, for they are many. Dr. Coutts got 100 different brands of machine-skimmed milk and 40 brands of full cream condensed milk. When something goes wrong with the process and one "lot" of condensed milk is too thick or too thin, then the wary manufacturer gives it a new and beautiful name and picture on the tin and sends it forth thus to fight against the baby, so the number increases yearly.

(3) The merchant makes more profit on machine-skimmed condensed milk than on full cream condensed milk. The figures are about 20 per cent. profit on the one and about 10 per cent. on the other.

Death and disease are in league with him and make a bigger profit still. The lack of fat leads to malnutrition, lowered vitality, rickets, scurvy, more liability to epidemic diarrhœa, and more predisposition to bronchitis, tonsilitis, pneumonia and adenoids, with all their evil consequences. A considerable proportion of infants fed on machine skimmed milk die in the first year, and those who survive are apt to be stunted, ill-developed and inefficient.

(4) Ignorance and poverty are the causes which lead to feeding babies on condensed milk. The mother pays 5½ pence for condensed milk, when she can get an equal amount of fresh full cream cow's milk for 5 pence. But she does not know it.

This research attracted much attention, and the general opinion about the matter is thus voiced by the *Lancet*:

"The State should step in wherever possible to prevent the waste of infant life which is due to ignorance and poverty, and, in the case of condensed milk, to render more difficult the commercial game of making things appear to be what they are not."

How much condensed milk is used in Ontario?

Immaturity.

More emphasis has recently been laid on infant deaths resulting from immaturity. It is remarked by Dr. Walford, M.O.H. for Cardiff, and by other observers, that State and Municipal Hygiene can do more for the infant after it reaches three months or so than before that time. Prematurity, weakness at birth, etc., can only be prevented by the care of the expectant mother and by her education and instruction in her duties and her responsibilities to her child.

A great controversy has been held over the question of the Employment of Married Women outside their homes, on which opinions are very varied.

It may be recalled that an important inquiry on this subject was made under Dr. John Robertson, M.O.H. of Birmingham, by Dr. Jessie Duncan, who made detailed and thorough investigation in St. George's and St. Stephen's wards in Birmingham. The two most important facts brought out by this enquiry were as Dr. Duncan says: "The mortality among the infants born in 1908 of all mothers employed, either before or after child birth, was at the rate of 190 per 1,000 births, while among those not industrially employed it was 207 per 1,000 births, and that the weight of babies at the end of 12 months did not vary greatly according to whether or not the mother was industrially employed, but did vary greatly according to the wages of the father."

"These mothers live more exacting and self-denying lives than probably any other group in the community. I have personal knowledge, and have the testimony of many reliable workers, that what food comes into the house is given to the children or the husband, while they themselves go on from day to day in a state of semi-starvation.

"The life of a mother among the poorer classes is always a strenuous one if the family is large, but when hunger is added, and particularly when such a woman is an expectant or nursing mother, the condition is a particularly distressing one."

The following are the figures referred to:

		Average Weight of Babies.
260	Industrially employed mothers after confinement.....	17.3 lbs.
157	Industrially employed mothers before but not after confinement.....	18.0 lbs.
399	Mothers not industrially employed	18.0 lbs.

	No. of Babies weighed.	Average Weight of Babies at 12 months.
All Infants breast-fed for 6 months.....	466	18.0 lbs.
All Infants partially breast-fed for 6 months.....	177	17.2 lbs.
All Infants bottle-fed for 6 months.....	173	17.2 lbs.

In the course of these weighings it was found that the question of the degree of poverty had a very considerable influence on the infant, whether breast-fed or not. This is shown in the following figures:

Income of Family, excluding Mothers, at Time of Birth.	No. of Babies weighed.	Average Weight of Baby at 12 months.
Father out of work	107	17.6 lbs.
Total Income under 10s. per week	52	16.8 lbs.
" 10s.—20s. "	303	17.5 lbs.
" 20s.—30s. "	300	18.3 lbs.
" over 30s. "	39	18.8 lbs.
Illegitimate Children, no income at first visit	15	18.0 lbs.

Dr. Robertson sums up his general conclusions as follows:

"I do not for a moment maintain that such industrial employment is free from all harmful influence. The mere fact that it prevents breast-feeding in the majority of cases is in my opinion a reason for some State interference. Here, however, it appears to be a question in this Birmingham area as to whether the additional poverty which would be occasioned by preventing mothers from working for, say, six months after a birth, would not be the greater of two evils."

The same investigation was carried on in 1910, but more thoroughly, as the organization to help the mother was better. Dr. Duncan says:

"The general conclusions to be drawn from another year's study of this question are much the same as those arrived at in 1908. It seems pretty certain that industrial employment has a bad effect on the infantile mortality, principally because it interferes with breast feeding. For this reason employment in a factory is more harmful than employment at home. But the influence of industrial employment is quite small when compared with the influence of acute poverty. It would seem, therefore, that in so far as the mother's employment reduces the acuteness of the poverty, it may tend to improve the infant mortality. At any rate, it is doubtful whether any further interference with the employment of married women would be at all beneficial as long as the acute poverty remains.

"The influence of poverty (even only dividing the wages into below and above £1 per week) on the infantile mortality rate is far greater than that of industrial employment. Employment of the mother apparently had the effect of causing a difference of 10 per 1,000 in the infant mortality, whereas the father's earnings being under or over £1 per week resulted in a difference of 65 per 1,000. Poverty appears to act upon the child both before and after its birth. The children may seem to be healthy at birth, but they have a very insecure hold upon life, and are unable to live in the poverty-stricken homes into which they are born.

Poverty.

Poverty, of course, is not a simple, but a complex condition. It probably means poor health, inefficiency, lack of energy, less than average intelligence or force in some way, not enough imagination to see the importance of details, etc., etc.

This report was made in February, 1911, and in March, of the same year, Dr. Robertson published a further statement. He thinks that infantile diarrhœa should be subject to Compulsory Notification. It was ascertained in 1911 that 73 per cent. of the cases of infant diarrhœa occurred in houses with four rooms or less, and only 27 per cent. in houses of more than four rooms.

The Mother Saves the Baby.

Breast feeding has once more been shown to be the great safeguard against infant diarrhœa. An infant nursed by the mother is almost or quite safe from infant diarrhœa. An infant fed artificially is 30 times more likely to die of infant diarrhœa than one nursed by the mother.

Housing.

No one condition has a more direct influence on infant mortality than housing. Poverty and misery and unfitness are of course at the bottom of both infant mortality and bad housing. To prevent infant mortality we must find some way of preventing destitution. Dr. Newman gives the figures for Finsbury in 1905, infant mortality.

Number of Deaths per 1,000 *Births.*

One-room tenement	219
Two-room tenement	157
Three-room tenement	141
Four-room tenement and upwards	99

In Hamilton, in Toronto, and elsewhere in Ontario during 1911, some thought has been taken about the housing problem. In Hamilton the Annual Report of the Health Officer states that a number of houses unfit for habitation, photographs of which are given, were closed by the order of the Local Board of Health.

Early in 1911 an investigation of housing conditions in certain districts of Toronto took place. It was ordered by the Local Board of Health at the request of the Medical Health Officer, Dr. Charles Hastings, and was provided for by a special grant of $800 from the Board of Control. Dr. Hastings appointed four women as housing inspectors to do this work, all of whom had special qualifications for the work and special knowledge of these districts. A physician received and revised their reports daily, inspected a number of doubtful or very bad houses and directed the investigation, as well as preparing and presenting the results which were published by Dr. Hastings in a report dated July 5th, 1911.

No better commentary on the infant mortality of Toronto, which was 1,727 in 1909, could be found than is furnished by this report. The following photographs and descriptions, with the accompanying statistics, are taken from it by kind permission of Dr. Hastings.

This picture was taken under the shadow of the City Hall. To the left is a tenement house occupied by six "families." There are six dark sleeping rooms in it. To the right is a "sanitary convenience," intended to be used by all the inhabitants of the row, except those in the third house. At the door of the third house may be seen the outside entrance to a closet in the cellar, used not only by the people of that house, but by the workers in the "factory" which occupies the top flat of all these houses.

In the foreground is a muddy, dirty, unpaved yard and lane. The tap with the pail under it is the sole water supply for all the houses, and the tenement house, and the workers in the factory—40 persons in all. The tap is sometimes frozen in winter. It is not protected at all from frost.

These are rear houses, hidden away in behind the street. They cannot be seen from the street. The rent for the houses is high. On the day the photograph was taken the owner had for some unknown reason cut off the use of the sole "sanitary convenience" for 30 people, in the manner shown by nailing it up.

The bare branches of the tree shown to the extreme right mark the place where stands an outside privy of another type, the condemned and out-of-date privy-pit. That closet belongs to a house on the front street rented for $10.00 a month. One of the best known real estate firms in Toronto collects the rent. The house is unfit for habitation. The outside privy has been for a long time over-flowing. Its disgraceful state may be seen from the open street across a vacant lot. Into that vacant lot the husband of the poor woman who still struggles to keep that house decent casts under cover of night, the "night soil." The same thing is done from seven other dwellings which we have reports of.

In other words, what we have read of with disgust as having happened in the cities of Europe in the middle ages, happens in Toronto now before our very eyes. But we do not look that way. We pass by on the other side.

Problems of the Great City.

Thus the problems of the great city have come upon us unawares, and are presented before us in this one scene:

(1) High rents.
(2) Rear houses.
(3) Dark rooms.
(4) Over-crowding.
(5) Tenement houses.
(6) Houses unfit for habitation.
(7) Inadequate water supply.
(8) Unpaved filthy yards and lanes.
(9) "Sanitary conveniences" (so-called) which, by their condition, their position or their lack are: A nuisance, a menace to public health, a danger to public morals, an offence against public decency.
(10) Infant mortality, tuberculosis, and other evils brought upon as a consequence of these conditions.

"Infant mortality is highest where, under urban conditions of life, filthy privies are permitted, where scavenging is neglected, and where the streets and yards are to a large extent not 'made up' or paved."—*Newsholme.*

In not a few instances a whole row of houses has been built on a back lane of a width of eight feet or even less.

The south end of the row of houses to the left of the next photograph is a striking instance of this. A tall man with arms outstretched, could probably touch the high wall on the right with one hand, and the houses on the left with the other. The road is a study in mud.

Behind the row of houses on the right is another still narrower lane. The street in front is only a lane, with mud six inches deep. But the narrower lane behind is deeper in worse filth, for the contents of the row of outside closets ooze out into that lane.

The Danger of Dust.

In summer the dust from unpaved streets gets into the house and into the food, particularly into the milk, and this probably causes a great deal of sickness and death among little children.

The same may be said of the uncared-for, dusty, dirty, muddy, sometimes filthy, often unsanitary yard and back lane.

A Plea for Playgrounds.

Grass is scarce in the City Hall district. These children seldom set their poor little feet in the green pastures. The street is dusty and dangerous, the yard is muddy and dirty.

The Slough of Despond.

Again the picture gives no idea of the depth of mud. It was a Slough of Despond. There was no drain at all.

Overcrowding.

The rear view shown above illustrates another example of over-crowding. On this lot, 90 feet by 44 feet, there are built four stores and five dwellings, three closets, two sheds and an "abattoir" on a small scale.

To the extreme left of the picture is a shed where the business of killing fowls is carried on. There are two barrels encrusted with gore to a thickness of about three-quarters of an inch. The whole shed is filthy.

Next is the door, propped open, of a closet out of order. The water runs down from it, and the little stream drains into the kitchen door of the rear dwelling opposite.

The window of the other rear dwelling is shown at the end. The whole yard is dirty and needs a good cleaning up. But the worst feature of all is the terrible condition of the outside closet draining into the kitchen. As the poor woman said, "Have to send my children away." "Catch easy sickness."

The next photograph shows another outside closet in a disgraceful state. But not so disgraceful as the one in the shed just opposite, which is not shown. It baffles description. So does the shed.

Toronto is now attempting to abolish these bad housing conditions and to establish a garden suburb in the near future.

In the Shadow of the City Hall.

Houses on a Back Lane.

The Slough of Despond.

Number of houses inspected	4,696
" " families living in one-room dwellings	198
" " families living in two-room dwellings	411
" " families living in three-room dwellings	646
" " families living in four-room dwellings	4,080
" " families living in basement cellars	79
" " families living in rear houses	246
Houses unfit for habitation	390
Toilets, privies or outside closets unfit for use	716
Dark rooms	48
Over-crowded rooms	109
Families with no water in house	559
Families with no drain in house	662
Families with no bath in house	3,095
Families with no toilet in house	2,207

The most dangerous of these figures to Toronto, Ontario, and Canada are those which mean the absence of the decencies of human life. Well did Sidney Webb speak of the "Soul destroying conditions of the one-roomed dwelling." Has the mother with her baby at her breast any chance in the one-room dwelling, the dark room, the cellar, the house unfit for habitation, the house that does not hold one water tap, one sink, one sanitary convenience? No. And therefore we buried our four babies a day in 1909.

The Children of the Province.

Why Did They Die?

The Province of Ontario, whose children thus die in thousands, (for no system of Birth Registration, however successful, can alter the fact that 6,932 children died within our borders in 1909), should know why they died, and a good deal more about the whole subject than it does at present? Realizing, in fact, as well as in name, that these are the Children of the Province of Ontario, we should do something to save them alive, and this we cannot do till we know more about them. Probably infant diarrhœa should be made a notifiable disease.

It Can Be Done.

It lies in our power to make a great improvement in our present high infant mortality rate, which is unworthy of Canada, and strikes, in more ways than one, at the root of the real prosperity of the nation. Every country that has tried to do it has succeeded in reducing infant mortality. It was stated this year, by Dr. S. G. H. Moore, the Health Officer of Huddersfield, who visited Villers le Duc, that the Mayor, who was a doctor, had made certain regulations *re* the care of infants, and had had them carried out. The result was that of all the infants born in that commune during ten years, *not one died.*

What community in Canada will make a record like that for one year..

"Catch Easy" Sickness.

It is Worth Doing.

According to figures published by the United States Conservation Commission, the monetary value of a new-born baby is $90. According to this the Province of Ontario lost $600,000 worth of babies in 1909, and the City of Toronto $155,430 worth in the same year.

As Others See Us.

Mr. and Mrs. Sidney Webb visited Canada in the summer of 1911. Whatever opinion we may hold as to their views set forth in the celebrated "Minority Report" of the Poor-Law Commission there can be little doubt that in aiming at the "Prevention of Destitution" they are getting at the root of the matter, and that as Social Experts they have few equals.

What did they see here, and what did they say?

"We have journeyed thousands of miles; rested in magnificent cities, counting their inhabitants by hundreds of thousands; passed over miles of cultivated fields and boundless prairies; gone through vast stretches of forest and seen the output of prolific mines; and—in spite of whole districts of barren waste of rock and sage-brush, and of some overcrowded quarters of the cities which are not far off being slums—we cannot say that we have seen even the smallest class of destitute persons. There are individuals in temporary distress. Here and there, in the great cities, you may find a roomful of persons—here and there in the "shack" that the "homesteader" first erects on the prairie you may find families—who are, in essentials, below the "poverty line." But the optimistic Canadians are right (and all Canada is just now more optimistic than the typical Western American) in feeling that, of destitution as a disease of society they have practically none."

A brief statement of the resources and prosperity of Canada follows:—

"What is just now happening, in short, is the individual appropriation and reduction to effective use of the natural resources of a vast continent, which was, until lately, not practically opened up.

This has been rendered possible by the enormous influx into Canada during the past decade of both capital and labor. The spirited advertisement policy and large-minded inducements of the Dominion Government are bringing over each year an addition of something like five or six per cent. to the total population; and a practically unlimited supply of capital is being placed by English, Scottish, and French investors at the disposal of the Great Canadian banks and "captains of industry." The result of all this is a perfectly marvellous "expansion"—everywhere new railroads are being built, new houses erected, new mines opened, new factories started, new industrial enterprises set going—parallel with the new acres being brought under cultivation. This means a practically insatiable demand for manual labor (and, indeed, for most other kinds, in due proportion and at the right points); and accordingly a high level of wages; and, just at present, no unemployment, even in winter. Thus, what is in progress in Canada during the opening years of the twentieth century is not the normal growth of a settled community, but the rapid—almost the sudden—economic appropriation of a new land. To the economist, the discovery of Canada will date, not from Jacques Cartier, or its acquisition from Wolfe, but from the opening of the "C. P. R." (Canadian Pacific Railway) in 1886. The present inhabitants of Canada are a race of conquerors.

It Baffles Description.

How long will this last? It may easily be predicted that as soon as the unappropriated land practically accessible to the urban laborer becomes exhausted, the usual wage-earning "proletariat" will emerge. This point may be reached long before the vast geographical areas on the map are all divided into farms; just as it was reached in the United States a generation ago. Land which the laborer cannot get to and cannot economically work is as good as no land at all.

Moreover, what is usually forgotten, the class of destitute persons in England is made up, to the extent of 95 per cent. of the sick, the feeble-minded, the lunatic, the aged, the crippled, and the widows and orphans. The chief reason why Canada has so few destitute persons is that nine-tenths of such persons have been left behind in Europe! No lunatic, sick, defective, or crippled person is allowed to land; the aged and the orphans likely to become chargeable are very grudgingly admitted; even the adult healthy immigrant is only admitted if he brings with him several pounds in cash; and the Asiatic races are excluded. The result is that Canada is, to an enormous extent, still a nation of healthy adults, self-selected for energy, enterprise, ambition, and endurance. We in Europe are maintaining—in our pauper class—a large proportion of the defectives and dependents belonging to these millions of conquering emigrants, who are themselves growing rich on their conquest.

What of the future? With this magnificent heritage of natural resources, and this carefully selected population, it will be a sin and a shame if the Canadian Dominion presently reproduces in Montreal and Toronto, Winnipeg and Vancouver, the "sweating," misery, and destitution of the Old World. It has all our experience to learn from. It has at its disposal all the achievements of economic and political science, and the successful experiments of Great Britain, Australia and New Zealand, and the Continent of Europe. It has a form of government and a constitutional framework which are the envy of the inhabitants of the adjacent States of America; and which are free from most of the vices that beset a new country. Capitalism, moreover, is, so to speak, on its good behavior, and is quite sincerely seeking its gain in efficient direction of the national enterprises.

The disquieting feature is the complete lack of any thinking about the problem, and the light-headed optimism of this nation of successful speculators in land values. The causes which produce destitution are already at work; and the beginnings of destitution, as a disease of society, are not far off. To begin with the babies. In Montreal and Toronto, as well as in Quebec, and generally throughout the cities of the Dominion, the infantile mortality is terrific—apparently equaling that of the worst slums of Preston and Liverpool. This implies, as we now know, the widespread deterioration of the infants who do not die, and the production of all sorts of degeneracy. It is no less a disgrace to the Canadian people and Government that the sickness rate and the death rate, more especially those of the obviously preventable zymotic diseases, should be, in practically all the Canadian cities, far above that of the average English town.

To put it shortly, the Canadian city is still essentially uncivilized—it is neither properly paved nor drained, nor supplied with water fit to drink, nor equipped with any adequate public health organization. This is particularly true of the cities of Quebec and Ontario, proud as they are of their civilization. The newer cities of the West have gone in much more for collectivist organization of the means of healthy city life. But after ages will wonder at the stupidity of Government and a people which takes so much trouble to bring in immigrants from every corner of Europe—even the Ruthenians and the Armenians—and, for sheer lack of public thought, lets its own Canadian babies die in quite unnecessary holocausts,

and for sheer lack of civic organization, allows even the laborers it has brought over to be decimated by enteric fever due to a contaminated water supply.

All this infantile mortality and adult sickness means that the production of a destitute class is beginning. The elaborate "eugenic" precautions taken at the ports are being nullified by the production of cripples and degenerates in the interior. Presently, too, the problem of the widow and orphan—as yet almost unfelt—will begin to demand a wise collective provision. Finally, the absence of any adequate provision for training the Canadian youth, so that he may grow up more than a manual laborer, will lead presently to an "unemployed" problem (which began to be seen in Toronto a few winters ago). All this demands thought—thought which does not seem yet to be given.

SUMMARY AND SUGGESTIONS.

Summary.

(1) Ontario has a high infant mortality.

(2) A high infant mortality is a sign of the need of education and of raising our standard of civilization, especially in sanitary matters.

Suggestions.

(3) This education should be made effective by the government, the municipality, the school, and the medical profession.

(4) The baby is a citizen. His or her arrival should be notified to the Division Registrar within 24 hours, by the doctor, father, nurse, or other responsible person. Immediately thereupon the Medical Health Officer should be notified and give an official card of birth registration, to be kept for the baby by the mother, to whom the card is to be given by the visiting nurse, within a few hours of the notificaton, in order that she may, if necessary, give expert advice and assistance in regard to the feeding and to the care of the baby.

(5) Every effort should be made to popularize the Birth Registration Bureau, by placing it, or a notice directing to it, in such a manner that every one who enters or passes the City Hall may see it. The convenience of the citizens to be consulted in every way. In cities over 100,000. this Birth Registration Bureau to be kept open at all times (perhaps with colored lights to indicate it), and every facility given to assist citizens to make registrations.

(6) The first person to notify any birth within 24 hours, to receive a fee of 25 cents from the municipality.

(7) Every certificate of death for any child under one year of age shall state the exact method employed to feed such child.

(8) Medical Health Officers to make weekly returns of births and infant deaths to the Secretary of the Provincial Board of Health, and to state in what ward, township, etc., such occurred.

(9) The Provincial Government to make a special grant of one-third of the salary paid to any physician or nurse exclusively employed in Infant Welfare work in any municipality.

(10) The Provincial Government to make a special grant under the terms of the Charity Aid Act of 14 cents per day for any infant nursed by the mother in any Provincial Institution, Hospital. Infants' Home, etc., and of 7 cents per day for any infant not nursed by the mother, in such Institution.

(11) The establishment of a Bureau of Infant Care and Management or Infant Welfare, under the Secretary of the Provincial Board of Health.

(12) The Registrar General to supply doctors with stamped and addressed post cards upon which to write the notification of births.

I have the honor to be,

Sir,

Your obedient servant,

HELEN MACMURCHY.

December 31st, 1911.

PROVINCE OF ONTARIO.

1908—Births, 55,388; Deaths under one year, 6,895; Infant mortality rate, 125 per 1,000.
1909— " 52,629; " " " " 6,932; " " " 131.7 "

CITIES.	Births.		Deaths under one year old.		Ratio of such deaths per 1,000 births.	
	1908.	1909.	1908.	1909.	1908.	1909.
Belleville	248	231	49	29	197.6	125.5
Brantford	597	523	95	91	159.1	174.0
Chatham	229	192	41	44	179.0	229.2
Fort William	442	413	110	94	248.8	227.6
Guelph	307	322	57	46	185.7	142.9
Hamilton	1,822	1,706	349	296	191.5	173.5
Kingston	395	451	71	86	179.7	190.7
London	1,024	965	205	175	200.2	181.3
Niagara Falls	214	200	47	36	219.6	180.0
Ottawa	2,035	1,920	521	545	256.0	283.9
Peterborough	459	390	78	72	169.9	184.6
Port Arthur	392	346	95	96	242.3	277.5
St. Catharines	294	242	50	47	170.1	194.2
Stratford	301	331	41	48	136.2	145.0
St. Thomas	334	295	62	45	185.6	152.5
Toronto	7,938	7,848	1,535	1,727	193.4	220.0
West Toronto	433	....	83	....	191.7	.....
Windsor	395	335	67	54	169.6	161.2
Woodstock	204	177	20	13	98.0	73.4